A COMPARATIVE STUDY ON THE EFFECTIVENESS OF DFMC CHART VERSUS CARDIFF COUNT TEN CHART IN RELATION TO MATERNAL COMPLIANCE AND MOTHERS PERCEPTION ON SELF ASSESSMENT OF FOETAL WELLBEING

By

ASHNA JOSE

A Dissertation submitted to **The Tamil Nadu Dr.M.G.R. Medical University**, Chennai, in partial fulfillment for the requirement of the degree of

Master of Science in Nursing

Branch III Obstetrics and Gynecological Nursing

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CERTIFICATE

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Sl. No	Abbreviations	
1	DFMC	Daily Fetal Movement Count
2	MOMS	Maternal Observation and Memories of Stillbirth
3	FEMINA	Foetal Movement Intervention Assessment
4	RFM	Reduced Foetal Movement
5	CTG	Cardiotocogram
6	PMR	Perinatal Mortality Rate
7	DFM	Decreased Foetal Movement
8	NST	Non Stress Test
9	APGAR	Appearance, Pulse, Gremaice, Activity, Respiration
10	CLAP	Latin American Center for Perinatology
11	IMR	Indian Mortality Rate
12	SRS	Sample Registration System
13	NFHS	National Family Health Survey
14	DOH	Department of Health
15	RR	Relative Risk
16	CI	Confidence Interval
17	OPD	Out Patient Department
18	SD	Standard Deviation
19	f	Frequency
20	S	Significant
21	NS	Not significant
22	LMP	Last Menstrual Period
23	EDD	Expected Date of Delivery

ABSTRACT

A comparative study on the effectiveness of DFMC chart versus Cardiff count ten chart in relation to maternal compliance and mothers perception on self assessment of foetal wellbeing

Pregnancy is considered as a very precious event in every women`s life. Foetal movement counting is a method in which a woman quantifies the movements of her baby. The purpose is to reduce perinatal mortality by alerting care givers when the baby might have become compromised. Yet for every 1000 birth the perinatal mortality is 37.7, varies from 24.8 in Kerala to 75.5/1000 in Orissa. It is higher in rural (54.4) and lower in urban and in Tamilnadu 37.9/1000. In India alone about 8,90,000 perinatal deaths occur annually.

Objectives of the study: 1) To assess the maternal compliance towards Cardiff count ten chart and DFMC chart. 2) To assess the mother's perception about Cardiff count ten chart and DFMC chart. 3) To compare the effectiveness of DFMC chart versus Cardiff count ten chart in relation to maternal compliance and mothers perception. 4) To find out the correlation between the maternal compliance and maternal perception towards DFMC chart and Cardiff count ten chart. 5) To find out the association between the selected demographic variables and maternal compliance to DFMC chart and Cardiff count ten chart.

Research Methodology: The research design adopted for this study was post test only design with comparison group. Non probability convenient sampling techniques were used. The study was conducted in PSG hospitals, Coimbatore. Desired samples of 40 were selected. DFMC chart was given to one group. The mother was used to record the number of fetal movements in the chart one hour after food at the morning, afternoon and evening. Cardiff count ten chart was given to another group, to assess the fetal movements for 12 hours in a day, from 9am to 9pm. During their next visit, perception was assessed.

Major Findings of the Study: Among the 40 antenatal mothers 6(30%) had non compliance and 14(70%) had compliance towards DFMC chart and in Cardiff count ten chart non compliance is 9(45%) and compliance is 11(55%). There is no significant difference in mother's perception between Cardiff count ten chart and DFMC chart $t=(0.221, p<0.05)$. There is a significant difference in maternal compliance between Cardiff count ten chart and DFMC chart $t= (9.123, p<0.05)$. There is no correlation between maternal compliance and perception towards Cardiff count ten chart and DFMC chart $r=(0.118, 0.015)$ $p<0.05$. There is no association between age, methods to monitor the foetal movements, knowledge about fetal movement counting in DFMC chart, and age, educational status, pregnancy category in Cardiff count ten chart.

Conclusion: In this study, two main protocols are used to assess the foetal wellbeing are Cardiff count ten chart and DFMC chart. The past researchers have shown that maternal monitoring of foetal movements can lead to lower incidence of stillbirth. While comparing the DFMC chart and Cardiff count ten chart there is an effectiveness of using DFMC chart for the self assessment of fetal wellbeing by antenatal mother in relation to maternal compliance.

Key Words: Compliance, Perception, DFMC chart, Cardiff count ten chart, Effectiveness.

CHAPTER-I

INTRODUCTION

1.1 Background of the Study:

Pregnancy is considered as a very precious event in every women`s life. It is filled with happiness, joy and surprises. Every parents hopes for a healthy baby, but may sometimes become sorrowful when danger sets in either to the mother or to the foetus. Pregnancy links mother and foetus together and is the basis for regeneration and the generation. In high risk pregnancies the mother may sometimes escape death but foetus and neonates often become the victim. **(Nitanjali Patel, 2013)**

During the past decades there has been significant improvement in obstetrics in achieving the antenatal surveillance of high risk pregnancy. Since above 75 percent of foetal death occur in the ante partum it is oblivious that limiting foetal surveillance to intrapartum period will not achieve optimal perinatal outcome. To be clinically useful ante partum test should be readily available, easy to perform, consistently reproducible, cost effective, easy to interpret and reliable, so that appropriate intervention can be undertaken when necessary. Assessing of foetal well being by monitoring foetal movement count by antenatal mothers fulfils all the above criteria. Process of birth is the most dangerous journey an individual undertakes. A healthy new born is the goal of every expectant mother and her physician. Yet for every 10000 births the perinatal mortality is 37.7, varies from 24.8 in Kerala to 75.5/10,000 in Orissa. It is higher in rural (54.4) and lower in urban and in Tamilnadu 37.9/10,000. It is estimated that 7.3 million perinatal deaths occur annually in the world and most of these in the developing countries. In India alone about 8,90,000 perinatal deaths occur annually.

The current Infant Mortality Rate (IMR) of India, as per the Sample Registration System (SRS) 2013, is 40 per 1,000 live births while the Under-5 Mortality Rate (U5MR) as per SRS 2012 is 52 per 1,000 live births. At this current rate of decline it seems it will be difficult for India to reach the target of less than 39 per 1,000 live births by the end of 2015. Globally the U5MR reduced by 49 per cent from 90 per 1,000 live births in 1990 to 46 per 1,000 live births in 2013, while India achieved a reduction of 59 per cent in the

Under-5 mortality from 126 in 1990 to 52 in 2012, which is higher than the global decline.Neo-natal deaths account for 56 per cent of Under-5 deaths in India which is much higher than the global average of 44 per cent. The progress in reduction of neo-natal mortality has been slow. In fact, four states- Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan account for half of the deaths in India. Assam with 75 per 1,000 live births tops the chart among states having Under-5 mortality above the national average of 52, followed by Madhya Pradesh (73), Odisha (68), UP (68), Rajasthan (59), Bihar (57) and Chhattisgarh (55), he said. However, as per SRS report, Andhra Pradesh has shown 17 per cent decline in between 2009 and 2012 and Rajasthan has shown 20 per cent decline during the same period. In India every year, 1.34 million children die before completing five years, of which 7,48,000 die within the first month of their life. In order to achieve a reduction in the Under-5 deaths, should focus on reducing neonatal deaths, which account for 56 per cent of total such deaths, by integrating quality maternal care with newborn care. **(Dr Gagan Gupta.2015).**

The foetal heart beat was first thought to be heard in utero in the middle of the seventeenth or eighteenth century, but it was not until the early nineteenth century. It is suggested that listening to the foetal heartbeat might be clinically useful. It proposed that it could be used to diagnose foetal life and multiple pregnancies, and to assess foetal compromise from variations in the foetal heart rate. Since, various methods of listening to the foetal heart rate have been developed and introduced into maternity care, each with the aim of improving outcomes for babies and reducing the headache for mothers and families when a baby dies or suffers long term disability. Today, monitoring the foetal heart during labour, by one method or another, appears to have become a routine part in antenatal care. **(Suraj Gupta, 2009)**

Foetal movement counting is a method by which a woman quantifies the movements she feels to assess the condition of her baby. The purpose is to reduce perinatal mortality by alerting care givers when the baby might have become compromised. Some clinicians believe that foetal movement counting is a good method as it all owes the midwife to make appropriate interventions in good time. On the other hand, foetal movement counting may cause anxiety to women. Foetal movement counting – often called ‘kick counting’ – represents a manoeuvre whereby a mother can

monitor the movements of her unborn baby by counting the number of kicks in a given time period. This is an indicator of foetal health and has been used for over a century. **(Marzano & Hanlon-Lundberg, 2004).**

At 7 weeks of gestation the title embryo is already squirming about, but because at this point it is so small and the mother cannot possibly feels its periodic contractions. By week 16 the mother may feel the first momentous kicks called 'quickening'. By 20th week of the gestation most mothers are able to feel the baby's movements and by week 28 the kicks will become stronger and regular. **(Nolte, 1998)**

Over the years, maternal perception of foetal movement has become recognized as a valuable tool for early detection of foetal compromise. The recording of foetal activity serves as an indirect measure of central nervous system integrity and function **(Rayburn, 1995),** indicating that foetal movements are a reliable sign of foetal well-being **(Bennet & Brown, 1999).** In study on excessive foetal activity as a worrisome sign. Rayburn, Rayburn and Gabel (1983) further clarified that foetal inactivity is strongly suggestive of foetal jeopardy. A change in the normal pattern or number of foetal movements may indicate that the foetus is under stress.

1.2 Need for Study:

Since biblical times, foetal movements have been viewed as a reassuring sign of a healthy pregnancy. Foetal movements in utero are a movement's expression of foetal wellbeing. By counting the foetal movements, a mother can therefore, monitor the condition of the foetus. Assessment of foetal movements is a non-invasive method of monitoring the wellbeing of the foetus.

'Quickening' is the first point at which the women experiences foetal movements in early pregnancy. It is a significant point in pregnancy for many women. In primigravida, it may be felt from 18-22 weeks and in multigravida, from 16-20 weeks. A foetal movement chart records the frequency of foetal movements and thereby assesses the condition of the foetus. It is a simple, valuable, effective, reliable and harmless screening of foetal wellbeing in low and high risk pregnancies.

Decreased fetal movement has been associated with poor pregnancy outcomes including stillbirth about 50% of women with stillbirth, they reported that they felt a gradual decrease of foetal movements before intrauterine death. Maternal perception of decreased foetal movement has been reported in 15% of pregnancy during the third trimester and around 50% of women perceives a gradual reduction of fetal movements before intra uterine death. **(Dr. Arms Grannbarm, 2014)**

FEMINA (Foetal Movement Intervention Assessment) is an ongoing international research collaboration conducted a study to improve pregnancy outcome. The findings reveal that women still do not get enough information on the importance of foetal activity to act in such a way to protect their baby. In 2008, Freon reported that 50% of affected mothers waited more than 24 hours without any foetal activity before contacting health professionals; one in three waited more than 48 hours. Public Relations efforts in Norway as well as in the U.S. are on the way to educating the public regarding kick count. **(Freon, 2008)**

According to NFHS Survey (2005-2006), the IMR in India is 57/10000 live births. Still birth is a high global burden and according to SRS estimates (2003), the still birth rate of India is 9/10000 and that of Karnataka is 20/10000 deliveries, which is highest among all other states. Some still births are unexplained and some are unavailable. But in some cases, still births can be preventive if the mother is highly aware of her foetal movements. **(NFHS Survey, 2005-2006)**

A study was conducted in Denmark among 2250 pregnant women regarding the value of maternal monitoring of foetal movements. Half of the women were taught to count foetal movement methodically and contact the hospital if they felt less than 3 foetal movements per hour. The controls were not given any specific instructions about counting foetal movements. There were 8 intrauterine deaths in infants weighing more than 1500g without major malformations in the control group and no deaths in the group with maternal monitoring of foetal movements. The result demonstrates that the maternal monitoring of foetal movement can aid the opportune delivery of infants, who are at increased risk of intrauterine death. **(Steen Neldam, 1980)**

According 2003 revision of the procedure for coding cause of foetal death under ICD10 the National Centre for health statistics defines foetal death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy and which not an induced termination of pregnancy. The death is indicated by the fact after such expulsion or extraction, the foetus does not breath or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles. Heart beat are to be distinguished from transient cardiac contractions, respirations are to be distinguished from respiratory efforts or gasps. In the United States, the term still birth of foetal demise does not have a standard definition. For statistical purposes the foetal loses are classified according to gestational age. A death that occurs prior to 20 weeks of gestation is usually classified as a spontaneous abortion those occurring after 20 weeks constitute a foetal demise or still birth. Many states use a foetal weight of 350gm or more to define a foetal demise. **(Patricia Mattingly, Leriv Smith M.D, 2003).**

Foetal movement, a sign of life, is widely considered as an indicator of foetal health status. Therefore, perceived alteration in regular foetal movement after the age of viability may signify impending adverse perinatal outcome. This study aimed to determine maternal knowledge, behaviour, and concerns about abnormal foetal movement in the third trimester of pregnancy. A total of 225 women were surveyed using a self-administered questionnaire at the out-patient prenatal clinics of two tertiary health facilities in Nigeria between December 1, 2012 through January 31, 2013. Questions addressed knowledge, perception behaviour, and concerns about experience of abnormal foetal movements. The result shows that correct knowledge of excessive and decreased foetal movement was found in 47% and 31.1% of respondents, respectively. Majority of women (87.6%) either had no knowledge of normal parameters of foetal activity or did not recall being told that, movement frequency and strength should increase in the third trimester. The proportion of women who expressed concern over excessive and decreased foetal movement was 31.1% and 21.8%, respectively. Maternal education was significantly associated with correct knowledge of decreased foetal movement ($p=0.026$). Almost 36% of respondents had knowledge of at least one potential consequence of abnormal foetal movement. To conclude, maternal educational level is an important

factor in the early identification of abnormality of foetal movement. The unsatisfactory knowledge and poor perception behaviour among respondents reflect the need for a guideline, particularly during antenatal care, on information and management of abnormal foetal movement in the setting to prevent avoidable stillbirth. **(Akintayo A A, 2014)**

Decreased foetal movement often precedes a stillbirth. The objective of this study was to describe women's experiences of foetal movement before the confirmation of foetal death. Data were collected through a Web-based questionnaire. Women with stillbirths after 28 gestational weeks were self-recruited. Content analysis was used to analyze the answers to one open question. The statements from mothers of a stillborn, during gestational weeks 28 to 36 were compared with those of a stillborn at term. The women's 215 answers were divided into three categories: decreased, weak, and no foetal movement at all; 154 (72%) of the descriptions were divided into three subcategories: decreased and weak movement (106; 49%), no movement at all (35; 16%), and contraction interpreted as movement (13; 6%). The category of foetal movement as normal includes 39 (18%) of the descriptions. The third category, extremely vigorous foetal activity followed by no movement at all, includes 22 (10%) of the descriptions. Eight (15%) of the women with stillbirths in gestational weeks 28 to 36 interpreted contractions as foetal movement as compared to 5 (5%) of the women with stillbirths at term. Uterine contractions can be interpreted as foetal movement. A single episode of extremely vigorous foetal activity can precede foetal death. The majority of the women experienced decreased, weaker, or no foetal movement at all 2 days before foetal death was diagnosed. Mothers should be educated to promptly report changes in foetal movement to their health care providers. Using foetal movement information to evaluate possible foetal distress may lead to reductions in stillbirths. **(Linda.A,2015)**

Maternal perception of foetal movement is one of the first signs of foetal life and is regarded as a manifestation of foetal wellbeing. Movements are first perceived by the mother between 18 and 20 weeks of gestation and rapidly acquire a regular pattern. Foetal movements have been defined as any discrete kick, flutter, swish or roll. A significant reduction or sudden alteration in foetal movement is a potentially important clinical sign. It has been suggested that reduced or absent foetal movements may be a

warning sign of impending foetal death. Studies of foetal physiology using ultrasound have demonstrated an association between RFM (Reduced Foetal Movement) and poor perinatal outcome. The majority of women (55%) experiencing a stillbirth perceived a reduction in foetal movements prior to diagnosis. A number of studies of foetal deaths in Norway and the UK identified that an inappropriate response by clinicians to maternal perception of RFM was a common contributory factor in stillbirth. **(Royal College of Obstetricians and Gynaecologists, 2011)**

Decreased foetal movements are present in 5% to 15% of pregnancies and are associated with intrauterine foetal death and intrauterine growth restriction **(Obstetrical & Gynaecological survey**, **2008).** In national level the last one year in rural area 35 per 10000 and in urban area 22 per 10000 intra uterine death was mentioned. **(Dr. Anjali Choudary, 2014)** In PSG hospital there were 6 intrauterine deaths reported from January 2014 to April 2014.

1.3 Statement of the problem:

A comparative study on the effectiveness of DFMC chart versus Cardiff count ten chart in relation to maternal compliance and mothers perception on self - assessment of foetal wellbeing.

1.4 Objectives:

1. To assess the maternal compliance towards DFMC chart and Cardiff count ten chart.
2. To assess the mother's perception about DFMC chart and Cardiff count ten chart.
3. To compare the effectiveness of DFMC chart versus Cardiff count ten chart in relation to maternal compliance and mothers perception.
4. To find out the correlation between the maternal compliance and mothers perception towards DFMC chart and Cardiff count ten chart.
5. To find out the association between the selected demographic variables and maternal compliance to DFMC chart and Cardiff count ten chart.

1.5 Assumption:

1. The mothers will be able to comply and record the foetal movements to one of the methods.
2. The mother will better comply with Cardiff count ten method than DFMC chart.

1.6 Hypothesis:

1. **H_1:** There will be a significant difference in maternal compliance to DFMC chart and Cardiff count ten chart.
2. **H_2:** There will be a significant difference in mothers perception about Cardiff count ten than DFMC chart.
3. **H_3:** There will be a correlation between mothers perception and maternal compliance towards DFMC chart and Cardiff count ten chart.
4. **H_4:** There will be a significant association between selected demographic variables and maternal compliance.

1.7 Delimitations:

- The study is limited to 40 antenatal mothers attending OPD at PSG Hospitals.
- The study participants are antenatal mothers from 32 weeks of gestation till term.

1.8 Operational Definitions:

1.8.1 Effectiveness: It refers to the correct recording of foetal movement by DFMC chart and Cardiff count ten chart there by identifying the foetal well being.

1.8.2 DFMC Chart: It is a tool in which the antenatal mothers used to record the number of foetal movements perceived by mother one hour after food (breakfast, lunch, dinner)

1.8.3 Cardiff count ten method: It is a tool in which the antenatal mothers used 8-12 hours period to record at least ten of baby's movements per day.

1.8.4 Compliance: The degree of constancy and accuracy with which an antenatal mother follows a prescribed regimen for recording DFMC chart or Cardiff count ten chart.

1.8.5 Perception: Mothers ability to understand about the foetal movements by using DFMC chart and Cardiff count ten chart.

1.8.6 Self assessment: Assessing the foetal movement in terms of kick rolling of foetus and maintain the record of the same by the antenatal mothers using DFMC Chart and Cardiff count ten chart.

1.8.7 Antenatal mothers: All pregnant mothers from 32 weeks of gestation attending the antenatal OPD.

1.8.8 Foetal well being: It refers that antenatal mothers perceives at least ten of baby's movements in 8 to 12 hours period.

1.9 Conceptual Frame Work:

The conceptual frame work is a theoretical approach to the study of problems that are scientifically based and emphasizes the selection, arrangements and classification of its concepts.

The theoretical frame work of the present study was developed from Pederson's health promotion model (1996). Pender's health promotion model aims to increase an individual health promotion activity. The model focuses on cognitive, perceptual and modifying factors that influence the health promotion activities. Health promotion entails activities directed toward developing resources that maintain or enhance a person's well being. The model embodies a number of theoretical propositions that can be used in developing and testing interventions and understanding health behaviours. The model embodies a number of theoretical propositions that can be used in developing and testing interventions and understanding health behaviours.

The model directs nurses to systematically assess clients for their:

Individual characteristics and experiences: It beliefs about the personal factors as biological, psychological, socio-cultural factors. Prior related behaviour are important because mother who had using the foetal movement assessment by DFMC Chart and Cardiff count ten chart. In this study personal factor includes the mother's age, education,

religion, marital status, obstetrical score and gestational age and previous usage of DFMC chart and Cardiff count ten chart and its impact on self assessment of foetal movements.

Perceived benefits of action: Perceived benefits of action is the belief about the positive or reinforcing consequences of a health promoting barrier.

Perceived barriers to action: Beliefs about the unavailability, inconvenience, expense, difficulty or time consuming nature of a health.

Situational Influence: Beliefs about the situation context of the health promoting behaviour. These beliefs may include perception of the available option, demand characteristics and aesthetic feature of the environment in which a given behaviour is proposed to take place situation influence on health behaviour.

Interpersonal Influence: Beliefs concerning the behaviour, beliefs or attitude of other regarding a health promoting behaviour, source of influence include social norms and social support.

Personal socio cultural and biologic factors: The factors include variable such as gender, race, education, socio economic status and family history.

Health promoting behaviour: A health promoting behaviour is an end point or action outcome directed toward attaining positive health outcome such as optimal well being, personal fulfilment and productive living.

According to this model, the present study conceptualized as follows,

Activity related effect: This includes the maternal compliance and perception is better with DFMC chart or Cardiff count ten chart for self assessment of a foetal wellbeing.

Perceived benefit of action: Self assessment of foetal wellbeing by counting the foetal movement using DFMC chart and Cardiff count ten chart.

Perceived barriers of action: Mother's inability to record foetal movements because of time constraints.

Situational influence: In this study mothers daily activities, work pattern, and environmental factors.

Interpersonal influence: Support from health care professionals and relatives.

Personal socio cultural factor: In this study variables such as age, gender, education, occupation, family history, socioeconomic status, obstetrical history and gestational age.

Health promoting behaviour: Monitoring of foetal movement and thereby assessing the foetal wellbeing.

Commitment to a plan of action: Assessment and comparison of DFMC chart and Cardiff count ten chart in antenatal mothers on their self assessment of foetal wellbeing and monitoring the foetal movements.

1.10 Projected Outcome

Maternal compliance and perception is better with DFMC chart or Cardiff Count Ten Chart for self assessment of foetal well being.

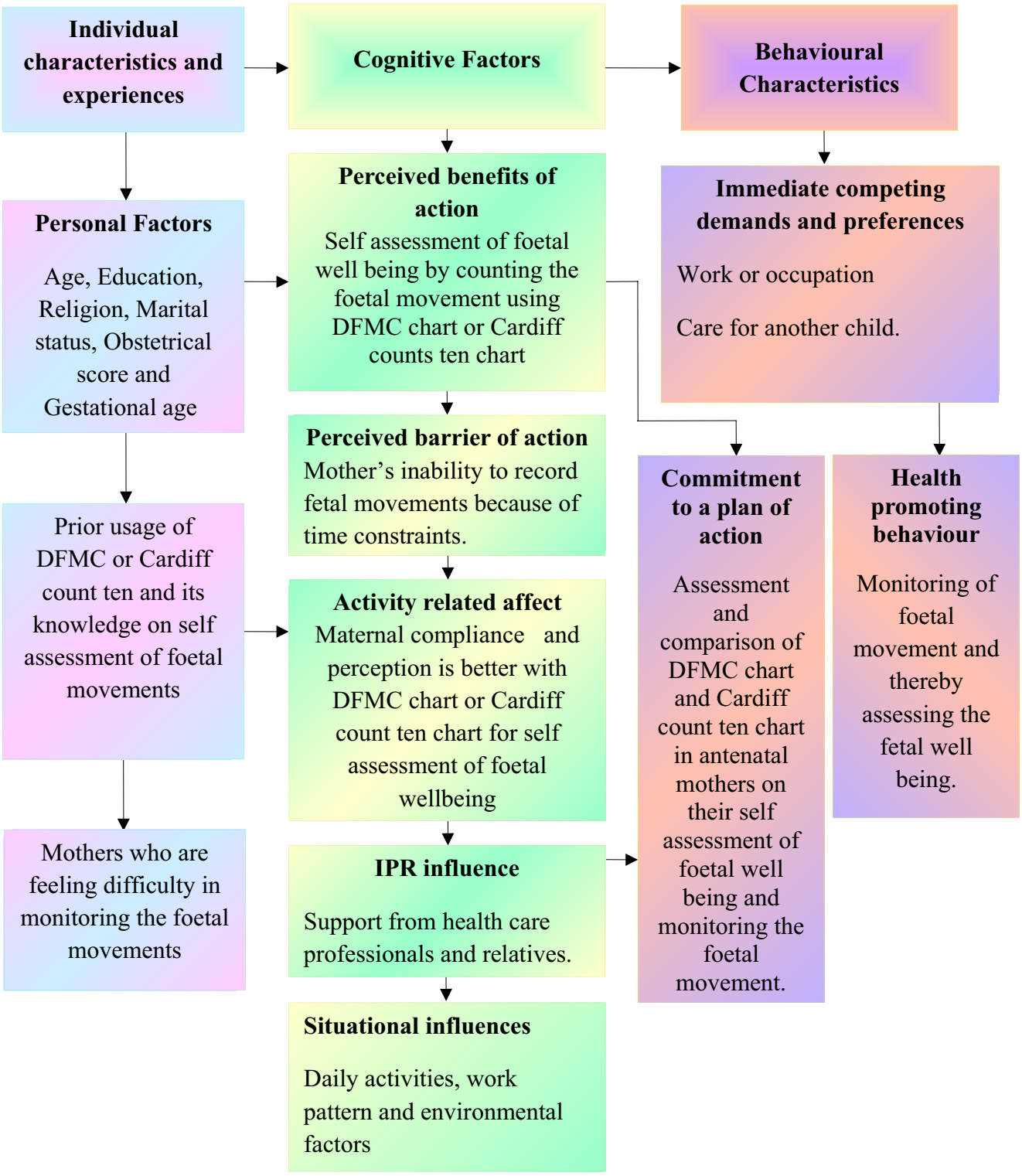

Figure 1.1 Modified Pender's health promotion model to assess the effectiveness of DFMC chart versus Cardiff count ten chart in relation to maternal compliance and mothers perception on self assessment of foetal well being

CHAPTER-II

REVIEW OF LITERATURE

The review of Literature provides a basis for future investigation, an insight to the problem, relates the findings of one study to another with the hope to establish a comprehensive link between the findings of the research review can also serve as the connecting link between the findings of the research that has been done in the problem area and the results of the proposed study **(Polit and Hungler, 1995).**

Literatures relevant for this study were reviewed and have been organised as follows:

2.1. Research related to importance of DFMC chart.

2.2. Research related to importance of Cardiff count.

2.3. Research related to the comparison of DFMC chart and Cardiff count chart.

Importance of DFMC Chart

A prospective study was carried out over 500 booked cases after introducing daily foetal movements count (DFMC) Chart in the ninth month of pregnancy. Prior ultrasound was done in all cases. DFMC Chart was used to record number of foetal movements perceived by patients for one hour after food (breakfast, lunch, dinner). The foetal movements were considered satisfactory if the count was 3 or more on each occasion. During the study period, no foetus was lost after introduction of DFMC Chart in the 250 cases that were given DFMC Chart and delivered in the hospital (Nil perinatal mortality). This was compared with 250 booked cases that were not given DFMC Chart but had normal ultrasound done after completion of 8 months of pregnancy and followed up. Five intrauterine deaths occurred in the ninth month in control group (2% perinatal mortality). In the DFMC Chart group, 15 patients were admitted with decreased foetal movements out of this 12 were discharged after monitoring for 3 days and 3 cases were delivered. **(Maj K Sindhu, et al., 2007)**

A prospective observational study conducted in the department of obstetrics and gynaecology St. Martha's Hospital over a period of 13 months from 01/03/2009 to 31/03/2010 included 50 pregnant women after 32 weeks of gestation and singleton pregnancies with <12 foetal movements in 24 hours. They underwent a cardiotocogram (CTG) or a non stress test and biophysical profile test and results were analyzed statistically. Although daily foetal movement counting is subjective, with onset of reduced foetal movements. It is prudent to advocate close foetal monitoring even in the presence of a reactive admission**. (Syeda R M, et al., 2013)**

According to the saving babies report (DOH, 2002), the Limpopo Province is subdivided into six district municipalities with the total of 43 hospitals, and 455 clinics and health centres. Forty (40) hospitals and 281 clinics have functional maternity units at which deliveries take place. In this report it is documented that the inappropriate response to poor foetal movements (8.2% in Limpopo Province) could be classified as patient-related avoidable factors. It was further pointed out that poor report of reduced foetal movement is frequently attributed to patient-related factors. Neldam observed that formal scoring of foetal movement in a low risk population resulted in a significant reduction in perinatal mortality in Sweden in 1979, in the context of this study it was not clear whether pregnant mothers understood the importance of foetal movement monitoring during pregnancy in relation to the perinatal outcome**. (RC Pattinson, 2002)**

The clinical value of the daily foetal movement count (DFMC) as a test of ante partum foetal wellbeing was assessed. The lowest 2-5% of 1654 DFMCs recorded by 61 women who subsequently delivered healthy infants fell below 10 movements per 12 hours. This level was taken as the lower limit of normal for clinical purposes. A normal DFMC in a population at risk was associated with a satisfactory foetal outcome. A low DFMC was associated with a high incidence of foetal asphyxia, and when foetal death occurred foetal movements rapidly diminished and stopped 12 to 48 hours before death. The DFMC is a generally applicable method of monitoring foetal welfare during pregnancy which provides an inexpensive adjunct or even an alternative to the more expensive placental function tests in current use. **(James F. Pearson, et al., 1995)**

A multicenter controlled trial on 1,013 woman with a singleton pregnancy were randomly assigned either to perform daily foetal movement counting from pregnancy week 28 or to follow standard Norwegian antenatal care where foetal movement counting is not encouraged. The primary outcome was maternal concern, measured by the Cambridge Worry Scale. Analysis was by intention-to-treat. The means and standard deviation on Cambridge Worry Scale scores were 0.77 and 0.90 for the intervention and control groups respectively, a mean difference between the groups of 0.14. The decreased foetal activity was concerned to 433 women once or more during pregnancy 45 and 42% in the intervention and control groups respectively. 79% of the women responded favourably to the use of counting charts. The result shows that women who performed foetal movement counting in the third trimester reported less concern than those in the control group. The frequency of maternal report of concern about decreased foetal activity was similar between the groups. Most women considered the use of a counting chart to be positive. **(Saastad .E, et al., 2012)**

The overall Perinatal Mortality Rate (PMR) in NSW (New South Wales) over the past two decades has fallen slightly from around 10 to approximately 9 perinatal deaths per 1000 live births. This modest improvement is attributed to the advances in neonatal care over this time. Foetal death (stillbirth) rates, however, have failed to show any reduction. The PMR for Aboriginal and Torres Strait Islander babies remains substantially higher than that for babies of non-Aboriginal or Torres Strait Islander mothers. Analysis of PMR by country of maternal birth also reveals differences with the PMR highest among babies of others born in Middle Eastern and African countries. In 2007, one in four perinatal deaths was an unexplained ante partum death (stillbirth). Of the 204 unexplained stillbirths 60.3% were <2500 grams and 63.7% were <37 weeks gestation. The majority of these unexplained deaths occurred in otherwise normal pregnancies. 1) Maternal perception of DFM is a common cause of unplanned antenatal presentation in the third trimester. 2) Maternal perception of DFM is associated with increased incidence of a number of adverse pregnancy outcomes including stillbirth, preterm delivery and intrauterine growth restriction. 3) Recent evidence suggests that the improved management of DFM and uniform information to women may be associated with fewer stillbirths. **(NSW Government of health)**

A multicentre, randomized, controlled trial, 1076 pregnant women with singleton pregnancies from an unselected population were assigned to either perform foetal movement counting from gestational week 28, or to receive standard antenatal care not including foetal movement counting (controls). Women were recruited from nine Norwegian hospitals during September 2007 through November 2009. Main outcome was a compound measure of foetal pathology and adverse pregnancy outcomes. Analysis was performed by intention-to-treat. The frequency of the main outcome was equal in the groups; 63 of 433 (11.6%) in the intervention group, versus 53 of 532 (10.7%) in the control group [RR: 1.1 95% CI 0.7–1.5)]. The growth-restricted foetuses were more often identified prior to birth in the intervention group than in the control group; 20 of 23 foetuses (87.0%) versus 12 of 20 foetuses (60.0%), respectively, [RR: 1.5 (95% CI 1.0–2.1)]. In the intervention group two babies (0.4%) had APGAR scores <4 at 1 minute, versus 12 (2.3%) in the control group [RR: 0.2 (95% CI 0.04–0.7)]. The frequency of consultations for decreased foetal movement was 71 (13.1%) and 57 (10.7%) in the intervention and control groups, respectively [RR: 1.2 (95% CI 0.9–1.7)]. The frequency of interventions was similar in the groups. The result shows that maternal ability to detect clinically important changes in foetal activity seemed to be improved by foetal movement counting; there was an increased identification of foetal growth restriction and improved perinatal outcome, without inducing more consultations or obstetric interventions. **(Eli Saastard, et al., 2011)**

Counting foetal movements are simple, pregnant women can in left lateral position. Every foetal movement is recorded in hourly basis each in daily morning, afternoon and evening. Foetal movement occurs before going to sleep at night, after dinner, when taking a bath or listening to music. All kinds of difference stimulate may cause foetal movement. Mother should be carefully observed daily foetal movement. If there is a foetal movement decrease or foetal movement suddenly speedup, suddenly increase and then quickly stopped. In the case of abnormal foetal movement mother should go the hospital. **(Nivin Todd .M D, 1999)**

Importance of the Cardiff count ten method

This is used in 8 to 12 hours period to record at least 10 of baby's movements. The time period will depend on, when the mother think baby is more active. For example, in the evening, if the baby has at least 10 movements with this 12 hours period, they are thought to be well. If the baby has not moved for 12 hours should contact health care providers.

When charting, start timing around the same time each day. The mothers felt her baby's movements and recorded the time and write it down on a graph. Try to count every movement or kick until the baby has moved 10 times. When the mother feels tenth movement write down the time or put as **'X'** in the box corresponding to that time.

A study was stated that perceived foetal activity is the oldest and least expensive technique for monitoring for foetal wellbeing. The mother's awareness of a loss or a significant decrease in propulsive foetal activity has been traditionally regarded as a warning sign, especially when uteroplacental insufficiency is present. Many investigators have reported the value of the daily foetal movement count as a means for signalling foetal jeopardy and possible demise. The aim of the study was to detect abnormal foetal conditions by registering foetal body movements. Cardiff count to ten kick chart was used. It was concluded that the daily foetal movements charting is a simple and effective method for the detection of abnormal foetal conditions and the foetal inactivity needs further investigations by NST. **(Listen .R .M, et al., 2001)**

From the 5th month of pregnancy, mother begins to feel foetal movement of her unborn child. The foetus in the womb stretch out hands, kick the legs, impact the uterine wall is the most fun to the mothers. Obstetrics expert in Guangzhou women's Hospital warns that the number of foetal movement is not constant. 22-36 weeks of pregnancy is active period of foetal movement. Normal foetal movement rhythm, little change, certain pathological conditions or dysfunction such as tight cord around neck, placenta dysfunction or pregnant women to use appropriate medication and adverse external stimuli are likely to lead foetal hypoxia, abnormal foetal movement. If less than 20 times of feral movement for 12 hours suggest foetal abnormalities. In the case less than 10

times is the foetal hypoxia. If in a time women with DFM, respectively. Reports of DFM did not increase during the intervention. The stillbirth rate among women with DFM fell during the intervention: 4.2% vs. 2.4%, and 3.0/1000 vs. 2.0/1000 in the overall study population. There was no increase in the rates of preterm births, foetal growth restriction, transfers to neonatal care or severe neonatal depression among women with DFM during the intervention. The use of ultrasound in management increased, while additional follow up visits and admissions for induction were reduced. **(Freon .J F, 1995)**

A Crossover trail; 40 healthy women with an uncomplicated full term pregnancy counted the foetal movements according to a count to ten method and assessed the character of the movements according to the mindfoetalness method. Each self assessment was observed by a midwife and followed by questionnaire. A total of 80 self assessment was performed; 40 with each method. Of the 40 women, only one did not find at least one method suitable. Twenty of the total of 39 reported a preference, 15 for the mindfoetalness method and five for the Count to ten methods. All 39 said they felt calm, relaxed, mentally present and focused during the observations. Furthermore, the women described the observation of the movements as safe and reassuring and a moment for communication with their unborn baby. In the 80 assessment all but one of the women found one or both methods suitable for self-assessment of foetal movements and they felt comfortable during the assessments. More women preferred the mindfoetalness method compared to the count-to-ten method, than vice versa. **(Malm, et al., 2014)**

A randomized trial included patients with singleton gestation between 28 and 34 weeks gestation, with intact membranes and not in labour. Consenting women were given a Hollister chart and account 10 charts in a cross-over manner over two consecutive 1 week periods. Each patients answered to questionnaire establishing which chart was preferred. Forty patients agreed to participate and 31 completed and returned both charts. The count ten and studies comparing different foetal assessment methods. Four studies, involving 71,370 women, were included in this review; 68,654 in one cluster-randomised trial. All four trials compared formal foetal movement counting. Two trials compared different types of counting with each other; one with hormonal analysis. Women in the formal foetal movement counting group had significantly fewer visits to the hospital

antenatally than those women randomised to hormone analysis (relative risk (RR) 0.26, 95% confidence interval (CI) 0.20 to 0.35), whereas there were fewer APGAR scores less than seven in five minutes for women randomised to hormone analysis (RR 1.72, 95% CI 1.01 to 2.93) There was a significantly higher compliance with Cardiff 'count to ten' (once a day) method than the foetal movement counting method where women were counting 30 minutes before meals and at bed time (more than once a day). **(Lindeka Mangesi, et al., 2010)**

Julie Victoria Holm Tveit, et al., (2009), Norway, in their study assessed the women experiencing decreased foetal movements (DFM) are at increased risk of adverse outcomes, including stillbirth. Fourteen delivery units in Norway registered all cases of DFM in a population-based quality assessment. We found that information to women and management of DFM varied significantly between the hospitals and they intended to examine two cohorts of women with DFM before and during two consensus-based interventions aiming to improve care through: 1) written information to women about foetal activity and DFM, including an invitation to monitor foetal movements, 2) guideline for management of DFM for health care professionals. All singleton third trimester pregnancies presenting with a perception of DFM were registered, and outcomes collected independently at all 14 hospitals. The quality assessment period included April 2005 through October 2005, and the two interventions were implemented from November 2005 through March 2007. The baseline versus intervention cohorts included: 19,407 versus 46,143 births and 1215 versus 3038 chart was clearly preferred over the Hollister chart because of the shorter recording period. The population of patients who fully completed the count ten charts during the week was significantly higher than the proportion completing the Hollister chart. **(J Marten, 2003)**

A descriptive survey on consultant obstetricians practicing obstetrics in the Republic of Ireland and a representative sample of midwives practicing midwifery in all 19 maternity units in the Republic of Ireland at the time of survey distribution following ethical approval, a questionnaire was mailed to consultant obstetricians and to Directors of Midwifery in September 2011 with a request for completion. Two postal reminders with further copies of the questionnaire were issued to non-responders. Midwifery and

obstetric response rates to the survey were 82% (n=47) and 71% (n=89) respectively. The majority of respondents reported an absence of local guidelines for detecting and managing DFM (Decreased Foetal Movements) in pregnancy. Less than 10 movements in 12 hours was the most frequently provided definition of DFM. A minority of respondents routinely recommended formal foetal movement counting for low-risk women (24% and 19% for midwives and obstetricians respectively). This increased considerably, however, for women who presented with DFM (62% and 47% in low risk women and 78% and 51% in high-risk women for midwives and obstetricians respectively). The Cardiff count to ten method was the chart of choice for more than 70% of all respondents. Large variations in management strategies for women presenting with DFM was identified; however, almost all respondents would perform a cardiotocograph (CTG) in women presenting with DFM. **(Valerie Smith, et al., 2014)**

The Cardiff count ten chart was developed by Pearson and Weaver. According to them they evaluated 173 pregnant women after the 26th week of gestation in this way. Evidence for foetal inactivity is less than 10 movements/12 movements hours. 10% of the pregnancies showed foetal inactivity; half of them are expected to have an unfavorable outcome due to placental insufficiency and foetal distress during labour. Foetal movement count charting is a simple and effective method for the abnormal foetal conditions. It should be used in all high risk pregnancies especially in cases of incompatibility in the Rh system, diabetes mellitus and placental insufficiency. **(Geburtshilfe Frauenheild, 1990)**

An observational study conducted on health pregnant women between 29-40 weeks gestation who were admitted with spurious labour to the Department of Obstetrics and Gynaecology, National University Hospital, Republic of Singapore. A continuous record of foetal heart rate and foetal movement was obtained using the foetal act cardiograph. Foetal movements felt by mother were also noted. If a continuous series of foetal movements were perceived over a period of 15 seconds or more it was termed clusters of foetal movement. The presence or absences of acceleration in relation to these movements were noted. There was a highly significant correlation between mother and machine in detection of clusters of foetal movements ($r=0.77$, $p<0.001$); for episodes of

foetal movements, the correlation was weaker ($r=0.23$, $p<0.05$). All clusters of foetal movements perceived by the mother were recorded by the machine and were associated with foetal heart rate accelerations. Two or more accelerations within 3 minutes of the foetal movements were seen with 87.8% of clusters felt by mother compared with 66.7% detected by the machine ($p=0.01$). In the 2,263 minutes of recording in 42 women, a cluster of foetal movements was felt at least every 25 minutes by the mother. The result shows that the maternal perception of 1 or 2 clusters of foetal movements in 30 to 60 minutes may be as reliable as a non-stress test in reassuring good health. It would be less time consuming than the traditional count to 10 foetal movement chart and a more reliable indicator of foetal health than counting episodes of foetal movements. Thus, the study suggests that clusters rather than episodes of foetal movements should be considered for evaluating foetal health based on foetal movements. **(Singh .K, et al., 2013)**

Comparison of DFMC method and Cardiff count to ten methods

A comparative study was done at Lima in Peru to determine the degree of compliance with a novel foetal movement chart by high risk patients the standard count to 10 methods. The prospective trial included 1400 high risk patients. Women with singleton gestations were randomly assigned to use either the count to 10 charts or a DFMC proposed by the Latin American Centre for Perinatology (CLAP). Compliance with regimens was compared between the two groups. Compliance in the CLAP group (448 of 700 was lower in the count to 10 group, 638 of 700; 64 versus 91%; $p<0.0001$). The main advantage of the count to10 chart was lack of interference with daily activities. The count to 10 methods is an easy and inexpensive tool for foetal monitoring and should continue to be used in obstetric practice. **(Gomez LM, Vega DL, 2012)**

A randomized trial on included patients with singleton gestations between 28 and 34 weeks of gestations, with intact membranes and not in labour. Consenting women were given a Hollister chart and a count to ten charts in a cross over manner two consecutive 1-week periods. Each patient answered questionnaire establishing which chart was preferred. All returned charts were evaluated for patient adherence. Data were analysed using either Fishers exact test. Forty patients agreed to participate, and 31

completed and return both charts. The count to ten charts was clearly preferred over the Hollister chart because of the shorter recording period. The proportion of patients who fully completed the count to ten charts during the week was significantly higher than the proportion completing the Hollister chart. To conclude the count to ten methods was clearly preferred and promoted higher level of adherence. **(FC. Christensen, et al., 2003)**

A cross sectional study was conducted among 156 antenatal women in a tertiary referred hospital, Sydney. Where the participants were more than 28 weeks carrying a single child, more than 18 years old and with sufficient English literacy to complete the questionnaire regarding the description of the fetal movements through the pregnancy. The results shows that, they used word such as gentle strong, and limb movements and whole body movements to describe the fetal movements. Only 16% regularly counted the fetal movements and many describing as counting as confusing. **(Jon A Ligette, 2013)**

Maternal perception of decreased fetal movements has been associated with adverse pregnancy outcomes, including stillbirth. Little is known about other aspects of perceived fetal activity. The objective of this study was to explore the relationship between maternal perception of fetal activity and late stillbirth (≥ 28 wk gestation) risk. Participants were women with a singleton, late stillbirth without congenital abnormality, born between July 2006 and June 2009 in Auckland, New Zealand. Two control women with ongoing pregnancies were randomly selected at the same gestation at which the stillbirth occurred. Detailed demographic and fetal movement data were collected by way of interview in the first few weeks after the stillbirth, or at the equivalent gestation for control women. A total of 155/215 (72%) women who experienced a stillbirth and 310/429 (72%) control group women consented to participate in the study. Maternal perception of increased strength and frequency of fetal movements, fetal hiccups, and frequent vigorous fetal activity were all associated with a reduced risk of late stillbirth. In contrast, perception of decreased strength of fetal movement was associated with a more than twofold increased risk of late stillbirth (OR: 2.37; 95% CI: 1.29–4.35). A single episode of vigorous fetal activity was associated with an almost sevenfold increase in late stillbirth risk (aOR: 6.81; 95% CI: 3.01–15.41) compared with no unusually vigorous activity. In this study suggests that maternal perception of increasing fetal activity

throughout the last 3 months of pregnancy is a sign of fetal well-being, whereas perception of reduced fetal movements is associated with increased risk of late stillbirth. **(Edwin .A, 2011)**

A convenience sample of 100 women attending two antenatal clinics in Auckland in November and December 2011 were interviewed. The main aim is to determine what information women in the third trimester of pregnancy receive about foetal movements, both from their maternity caregivers and from other source. Ninety-seven per cent of women reported that their Lead Maternity Care (LMC) regularly asked about foetal movements, and 62% recalled receiving information from their LMC about what to expect regarding foetal movements in the last three months of pregnancy. Thirty-three per cent recalled receiving information from their LMC that their baby's movements should increase or stay the same and 20% that their baby's movements may decrease in late pregnancy. Forty per cent were advised to contact their LMC if they had any concerns about their baby's movements, and one-quarter were informed to seek advice if they had fewer than 10 movements in a day. The study suggests a proportion of pregnant women in Auckland do not have optimum information about foetal movements. Strategies to enhance maternal knowledge such as a pamphlet about foetal movements may be helpful. **(Robin Cronin, 2012)**

Summary:

This chapter deals with the review of literature like the importance of DFMC chart and Cardiff count ten chart and the comparison of both charts

CHAPTER III

MATERIALS AND METHOD

Designing a research involves the development of plan or strategy that will guide the collection and analysis of data. The present study is comparing the effectiveness of DFMC chart versus Cardiff count ten chart in relation to maternal compliance and mothers perception on self assessment of foetal well being.

The methodology of the study includes research design, setting, population and sampling criteria for selection of samples, instruments and tool for data collection, pilot study report and changes made after pilot study.

3.1 Research approach and design:

Post test only design with comparison group. It helps the investigator to carried out on both the groups to assess the effect of manipulation. This design can be helpful in situations where it is not possible to pre-test the subjects.

Group 1:	DFMC Chart	⟶	Post test
Group 2:	Cardiff count 10 Chart	⟶	Post test

Post test only design with comparison group

Intervention 1: DFMC chart was given to one group. The mothers should record the number of foetal movements in the chart one hour after food in a day that is morning, afternoon, evening.

Intervention 2: Cardiff count ten chart was given to the second group. The mother foetal movement assessment for chart 12 hours in a day, from 9 am to 9 pm.

- Post test was done during their next visit by using the questionnaire for mother's perception and foetal movement charts.

3.2 Variables of the study:

3.2.1 Independent variable:

- In this study education, on self assessment of foetal wellbeing by researcher using DFMC chart and Cardiff count ten chart is the independent variable.

3.2.2 Dependent variable:

- The dependant variable in this study is self assessment of foetal well being using the foetal movement chart by mothers, age, parity education, previous experiences.

3.3 Setting of the study:

The study was conducted in ante natal OPD in PSG hospital Coimbatore. PSG is a NABH accredited with 1300 bedded multispecialty hospital. There are about 100 to 150 antenatal mothers attending antenatal OPD every day.

3.4 Population and sampling:

Antenatal mothers who are after 32 weeks of gestation coming in PSG hospitals were included for the study. Sample size is calculated by using precision method and 40 samples were selected.

Sample size calculation:

Precision method:

$$n=\frac{z^2\,SD^2}{\left(1\%\,of mean\right)^2}$$

SD = Standard Deviation of population

Z = Value of normal deviate at p<0.05 level of significance.

$$\frac{(1.98)^2\times(9.2)^2}{(1.96)^2}$$

$$= 18$$

n=18 x 2 = 36

Selected sample = 40

Cardiff Count Ten Chart = 20

DFMC Chart = 20

3.4.1 Sampling technique:

- Non probability convenient sampling technique.

3.4.2 Sample selection criteria:

Inclusion criteria:

- All ante natal mothers beyond 32 weeks of gestation who attended the outpatient department.

Exclusion Criteria:

- Antenatal mothers who are coming with labour pain.

3.5 Instruments and tool for data collection: Assessment tool was prepared based on the objectives of study.

3.5.1 Validity and Reliability: The demographic tool was prepared with the help of various literatures and based on objectives. The reliability of the tool assessed by test retest method. The reliability of the DFMC was 0.72 and the Cardiff count ten chart was 0.78.The tool was found to be reliable and feasible. Validity of the tool was established by giving the experts in the fields of OBG and OBG nursing and the modifications were done accordingly.

3.5.2 Technique of Data Collection: Data collection was done for a period of 30 days. The data was collected through interview method and mothers records. Forty antenatal mothers who met the inclusive criteria were selected for the study. After collecting the data, random assignment of subjects was done with simple flip of a coin for each subject. If the coin lands on its head the mothers are assigned to DFMC chart and the tails are assigned to Cardiff count ten chart. The mother who got the DFMC chart were instructed to record the number of foetal movements perceived by mother one hour after food (breakfast, lunch, dinner) and those who got Cardiff count ten chart were instructed to record the foetal movements for a period of 8-12 hours. Both the charts were collected during her next visit and asked the mothers to fill up the questionnaire for assessing the mother's perception about foetal movement chart.

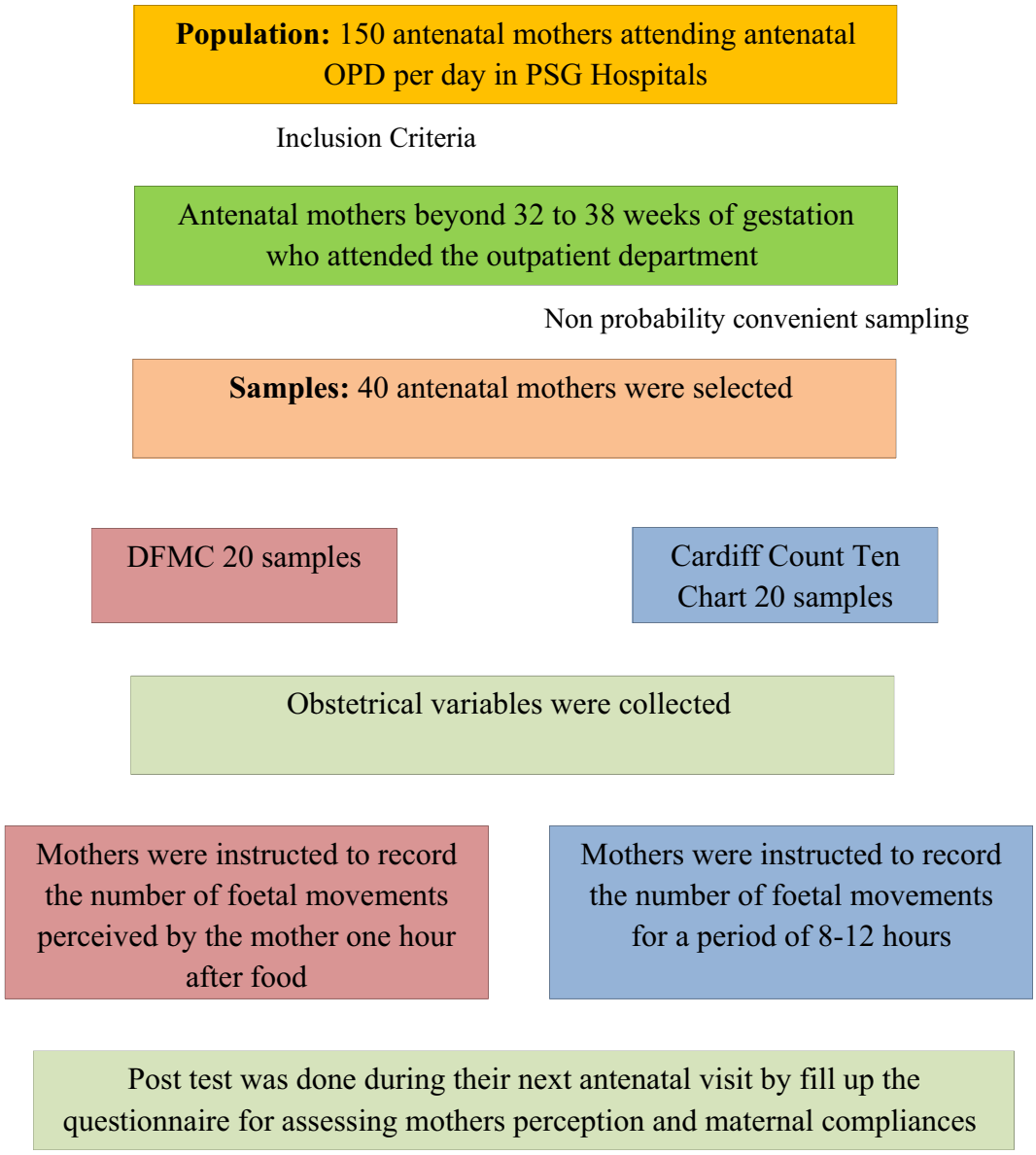

Figure 3.1: Flow chart showing the techniques of data collection

3.5.3 Data collection procedure:

Description of the tool: The tool consists of three sections

Section A: Demographic and baseline data of mother.

Section B: Cardiff count ten chart.

Section C: DFMC chart.

Section D: Questionnaire on mother's perception about foetal movement count charts.

Section A: Demographic variables which include age, educational status, occupation, income, religion, no of working hours per week the mothers works, obstetrical score, LMP, EDD, gestational age, normal or high risk pregnancy, number of antenatal visit, have the mothers thought a method to count and keep track of your babies movements in this pregnancy or previous pregnancies and previous knowledge about foetal monitoring. (Annexure IV)

Section B: It includes Cardiff count ten chart. In count ten chart the mother record the foetal movements in 8-12 hour's period. It should be at least 10 of foetal movement. (Annexure IV)

Section C: It include DFMC chart. In this the ante natal mothers used to record the number of foetal movements perceived by the mother one hour after food (breakfast, lunch, dinner). (Annexure IV)

Section D: Questionnaire on mother's perception about foetal movement count chart. In this, questionnaire consists of 10 questions and each question has five possible responses as definitely yes, yes, uncertain, no, definitely no. The scores were categorized as 5, 4, 3, 2, 1. Mother's perception was graded based on the total score. (Annexure IV)

The interpretations are divided as

Score	Grade Interpretation
10 – 23	Poor
24 – 36	Good
37 – 50	Very good

3.6 Ethical Approval:

The Institutional Human Ethics Committee (IHEC), PSG institute of medical science and research had reviewed the proposal on 23.3 .2015 in its full board meeting and approved the study. After getting clearance from the institutional human ethics committee (IHEC), pilot study was done. After the findings of the pilot study, main study data collection was done. (Annexure II)

3.7 Report of pilot study: Pilot study was conducted to test the validity, practicability of the tool and feasibility of conducting the study. Pilot study was conducted for a period of one week at PSG Hospitals, Coimbatore. Ten samples were selected for the study. The selection is mainly based upon the inclusive criteria. The demographic variables and baseline data of mother was done priorly. After collecting the data, random assignment of subjects was done with simple flip of a coin for each subject. Among ten samples, five samples were DFMC chart and another five were Cardiff count ten chart. The researcher collected the chart after one week and the researcher asked the mothers to fill up the questionnaire for mother's perception about foetal movement chart. The researcher provides the questionnaire for mother's perception about foetal movement chart. The results of the pilot study showed that both DFMC chart and Cardiff count chart, mothers completed all the days, and mothers showing good perception.

3.7.1 Changes brought after pilot study: During the pilot study presentation the minor changes was done in grading and it is included in the evaluation form and some modifications were done on the conceptual frame work.

3.8 Data analysis plan: Both the descriptive and inferential statistics are used to analyze the data. Data is presented in tables and figures. Statistical analysis was done by using unpaired 't' test to assess the effectiveness of DFMC chart and Cardiff count ten chart. Chi square test was used to find out the association between selected demographic variables and maternal compliance.

Descriptive statistics will be used to find the frequency and percentage distribution of demographic variable of antenatal mothers with Cardiff count ten chart and DFMC chart.

Un Paired 't' test will be used to assess the effectiveness of DFMC chart versus Cardiff count ten chart was analysed by using un paired 't' test.

Chi Square test will be used to find out the association between selected demographic variables and maternal compliance.

Karl Pearson's coefficient correlation will be used to find the correlation between the mothers perception and maternal compliance

Summary:

This chapter discussed the material and methodology used for the present study. The methods used in the study are post test only design with comparison group. This chapter also deals with the research design, variables, setting, sample selection criteria, instruments and tool for data collection and the data analysis plan. Next chapter will be deal on data analysis and interpretation.

CHAPTER-IV

DATA ANALYSIS AND INTERPRETATION

Analysis is the process of organizing and synthesizing the data in such a way that research questions can be answered and hypothesis can be tested. The data was assembled, analyzed and tested for significance analysis is the method of rendering qualitative data as meaningful and providing intelligent information. In this study the effectiveness of DFMC chart and Cardiff count ten chart in relation to the maternal compliance and self perception were assessed.

Section I: Demographic and Obstetrical variables of antenatal mothers.

Section II: Frequency and percentage distribution of mother's perception and maternal compliance towards DFMC chart and Cardiff count ten charts.

Section III: Comparison of mother's perception and maternal compliance towards DFMC chart and Cardiff count ten charts.

Section IV: Correlation between mother's perception and maternal compliance towards DFMC chart and Cardiff count ten charts.

Section V: Association of maternal compliance with their selected demographic variables in mothers using DFMC chart and Cardiff Count Ten chart.

Section I: Demographic and Obstetrical variables of antenatal mothers.

Table 4.1: Frequency and percentage distribution of demographic variables of mothers in Cardiff Count Ten Chart and DFMC Chart

n=40

Demographic variables	Cardiff Count Ten Chart n=20		DFMC Chart n=20	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Age				
20-25	8	40	14	70
26-30	12	60	6	30
Educational Status				
Primary	2	10	1	5
High School	6	30	7	35
HSC	5	25	6	30
Graduate	7	35	6	30
Occupation				
Government	0	0	0	0
Private	2	10	0	0
Self	1	5	1	5
Housewife	17	85	19	95
Income				
5000-10,000	11	55	11	55
10,000 – 15,000	5	25	5	25
15,001 – 20,000	3	15	1	5
20,001 – 25,000	1	5	3	15
Religion				
Hindu	16	80	18	90
Muslim	3	15	1	5
Christian	1	5	1	5
Others	0	0	0	0
Working Hours/week				
Less than 10hours	7	35	9	45
10-20 hours	11	55	10	50
20-40 hours	2	10	1	5
More than 40 hours	0	0	0	0

Among 20 antenatal mothers 8 (40%) of women age ranged from 20 to 25 years and 12(60%) were in 26 to 30 years in Cardiff count ten chart. In DFMC chart 14(70%) in 20 to 25years and 6(30%) in 26 to 30years. In educational status, 7(35%) were graduates in Cardiff Count Ten Chart, but in DFMC chart 7(35%) were studied in high school. About occupation 17(85%) of mothers were housewives and 19(95%) were in DFMC chart.

According to the listing of religious preference 16(80%) were Hindus in Cardiff count ten chart and DFMC chart 18(90%) of mothers are Hindu and only one mother belong to Muslim and one mother belong to Christian. In Cardiff count ten chart, among the twenty antenatal mothers 7(35%) of mothers working less than 10 hours, 11(55%) working between in 10-20 hours, 2(10%) were in 20-40 hours. But in DFMC Chart, 9(45%) were in less than 10 hours, 10(50%) were working in between 10-20 hours and 1(5%) were working between 20-40 hours.

Table 4.2: Frequency and percentage distribution of obstetrical variables of mothers in Cardiff Count Ten Chart and DFMC chart

n=40

Demographic variables	Cardiff Count Ten Chart n=20		DFMC Chart n=20	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Obstetrical Score				
Gravida 1	13	65	16	80
Gravida 2	9	45	9	45
Para 1	11	55	9	45
Para 2	0	0	0	0
Live 1	11	55	9	45
Live 2	0	0	0	0
Abortion 1	1	5	4	20
Abortion 2	0	0	0	0
Gestational Age				
< 36 weeks	13	65	14	70
36-37 weeks	7	35	5	25
>37 weeks	0	0	1	5
Pregnancy Category				
Normal	18	90	19	95
High risk	2	10	1	5
Number of antenatal visits				
1-4	0	0	0	0
5-9	7	35	10	50
10-15	6	30	9	45
More than 15	7	35	1	5
Methods taught to monitor the fetal movements				
Yes	3	15	4	20
No	17	85	16	80
Previous knowledge about fetal movement monitoring				
Yes	1	5	2	10
No	19	95	18	90

In the obstetrical variables of antenatal mothers, 16(80%) of mothers were primi mothers in DFMC chart and in Cardiff count ten chart 13(65%)of mothers were primi mother In both DFMC chart and Cardiff count ten chart 9(45%)of mothers were multi gravida mother. 1(5%) of mothers having abortion in Cardiff count ten chart and 4(20%)

of mothers in DFMC chart. About gestational age, 13(65%) of mothers were in <36 weeks. in Cardiff count ten chart, in same manner 14(70%) belongs to <36 weeks in DFMC chart. Among 20 antenatal mothers 18(90%) were normal and 2(10%) mothers are high risk women in Cardiff count ten chart. But in DFMC chart 19(95%) and in high risk it is decreased to 1(5%)

Majority 17(85%) of mothers were not taught to monitor the fetal movements in Cardiff count ten chart. In DFMC chart, 16(80%) were not taught the fetal movements. Likewise 1(5%) and 2(10%) of mothers have the knowledge about the fetal movement in both Cardiff count ten chart and DFMC chart. 19(95%) and 18(90%) of mothers in Cardiff count ten chart and DFMC chart were not having the previous knowledge about fetal movements.

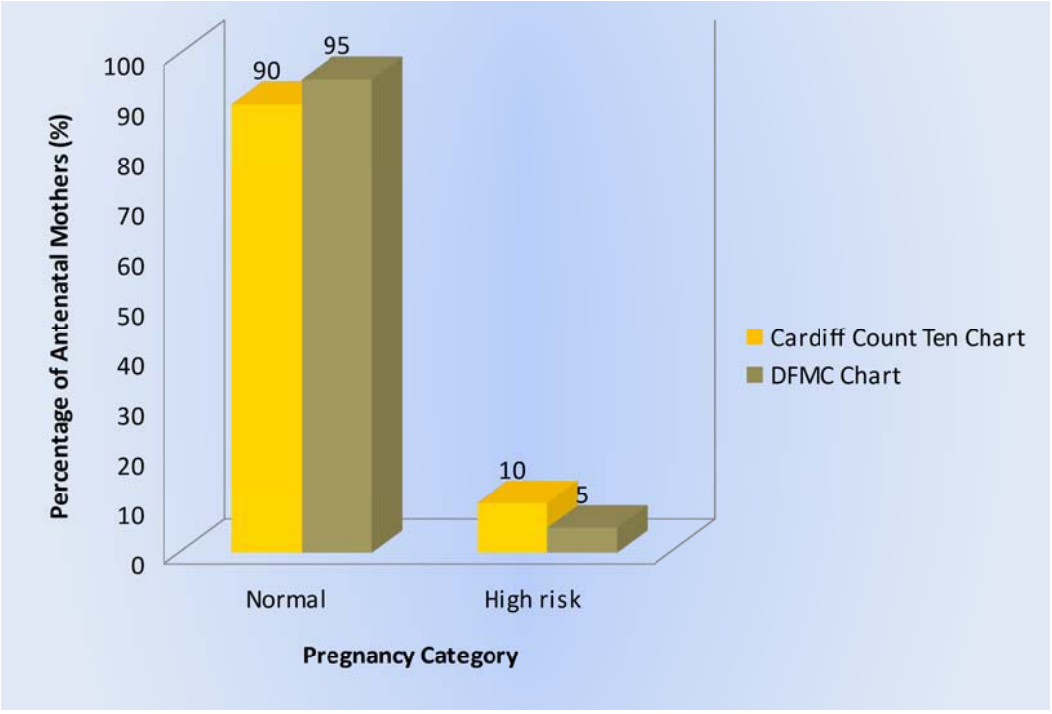

Figure 4.1: Bar diagram showing the percentage distribution of antenatal mothers according to pregnancy category

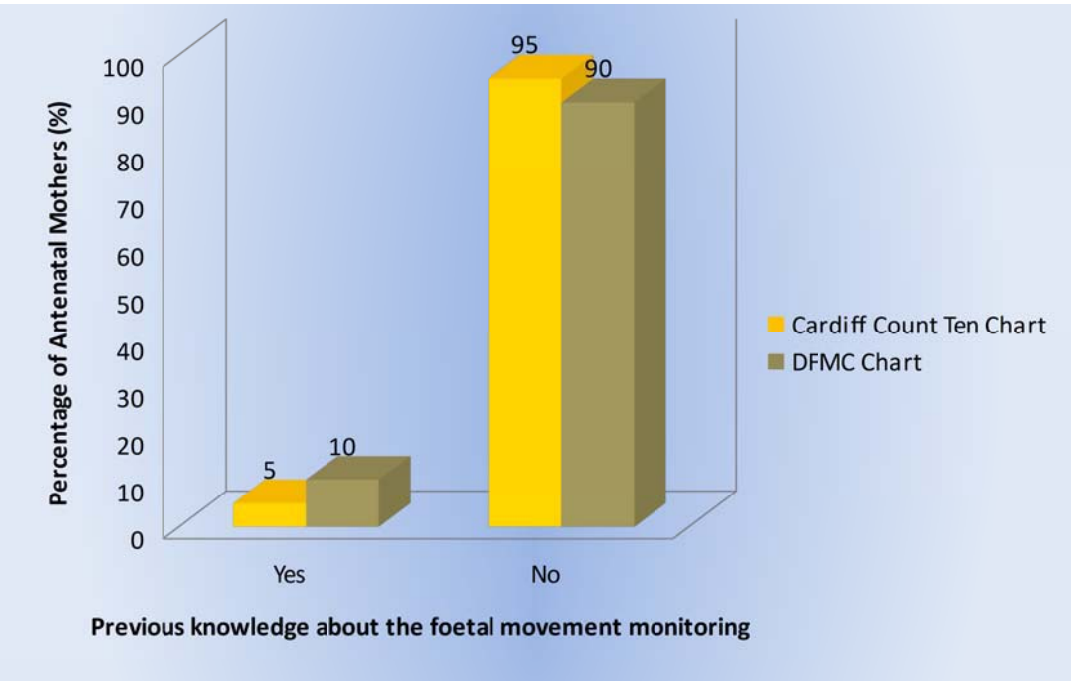

Figure 4.2: Bar diagram showing the percentage distribution of mother's previous knowledge about the foetal movement monitoring

Section II: Frequency and percentage distribution of mother's perception and maternal compliance towards DFMC chart and Cardiff count ten charts.

Table 4.3 Frequency of mother's perception regarding DFMC Chart and Cardiff Count Ten Chart

n=40

	DFMC Chart										Cardiff count ten chart									
	Definitely yes		Yes		Un certain		No		Definitely No		Definitely yes		Yes		Un certain		No		Definitely No	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
1. I feel comfortable completing the foetal movements chart.	14	70	5	25	1	5	0	0	0	0	13	65	6	30	1	5	0	0	0	0
2. I know how to fill in the chart correctly.	14	70	6	30	0	0	0	0	0	0	11	55	8	40	1	5	0	0	0	0
3. I know what counted as a foetal movement.	13	65	7	35	0	0	0	0	0	0	10	50	9	45	1	5	0	0	0	0
4. I find this method of counting foetal movements' hard to do.	1	5	0	0	0	0	17	85	2	10	1	5	1	5	0	0	14	70	4	20
5. It was difficult to complete this chart.	0	0	2	10	0	0	3	65	5	25	3	15	1	5	10	50	6	30	1	5
6. I feel counting foetal movement method was time consuming.	1	5	3	15	2	10	12	60	2	10	1	5	6	30	0	0	11	55	2	10
7. I feel the counting of foetal movement interfere with my daily activities.	1	5	2	10	13	65	4	20	0	0	0	0	2	10	2	10	9	45	7	35
8. Counting the foetal movements make me anxious about my baby.	1	5	4	20	0	0	10	50	5	25	1	5	9	45	1	5	0	0	9	45
9.I feel that counting the foetal movements is a worthwhile tool for mothers to use during the pregnancy	14	70	6	30	0	0	0	0	0	0	9	45	11	55	0	0	0	0	0	0
10. I was able to identify the foetal movements by using this method.	14	70	6	30	0	0	0	0	0	0	6	30	14	70	0	0	0	0	0	0

Table 4.3 shows that, the majority 14(70%) of the antenatal mothers feels comfortable definitely in completing the DFMC chart were as 13(65%) felt the Cardiff count ten chart has definitely helped the same. Most of the mothers 14(70%) knew how to fill the DFMC chart correctly were as 11(55%) felt the same about Cardiff count ten chart. More than half 13(65%) know what counted as fetal movement in DFMC charting, where as 9(45%) affirmed the same in Cardiff count ten chart. More than half 12(60%) who used DFMC chart and 11(55%) who used Cardiff count ten chart felt their respective method for time consuming. DFMC was considered as a remarkable tool for mothers by 14(70%) of the antenatal mother. While only 9 (45%) observed the same about Cardiff count ten chart. Most of the mothers who used DFMC 14(70%) stated that they were able to identify the fetal movements using these methods. While only 6(30%) of the antenatal mother were definitely able to identify fetal movement by using Cardiff count ten chart.

Table 4.4: Frequency and percentage distribution of level of mother's perception towards Cardiff Count Ten Chart and DFMC Chart

n=40

Perception	Good (24-36)		Very Good (37-50)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Cardiff Count Ten Chart	14	70	6	30
DFMC Chart	16	80	4	20

According to table 4.4 the level of mothers perception, 14(70%) of mothers were having good perception and 6(30%) of mothers showing very good perception in Cardiff count ten chart In DFMC chart, 16(80%) of the women in good perception and 4(20%)of women showing very good perception. No one showing the poor perception in both charts.

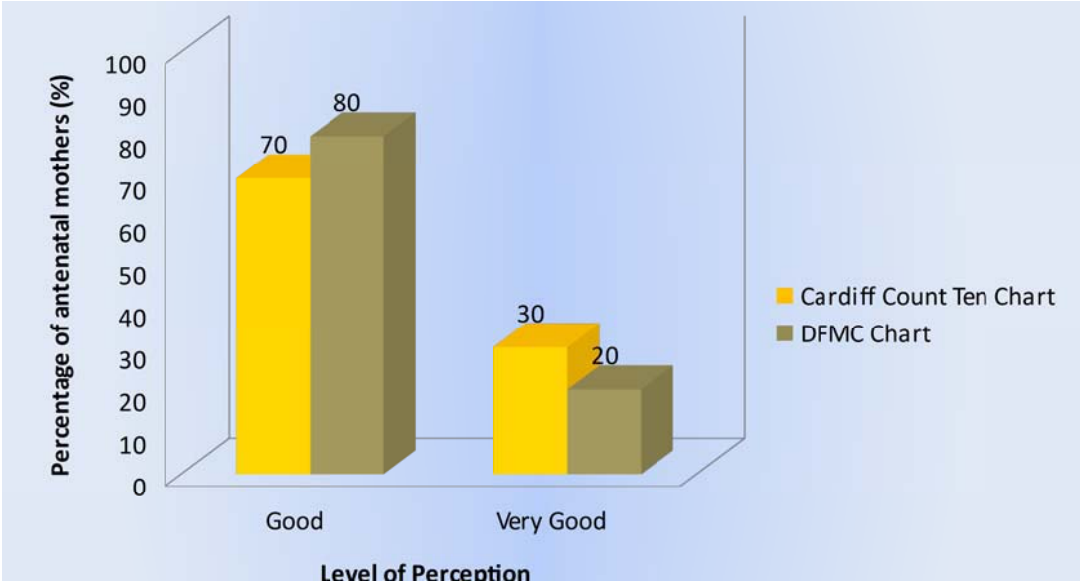

Table 4.5: Frequency and percentage distribution of level of maternal compliance among mothers towards Cardiff Count Ten Chart

n = 40

Maternal Compliance	Non Compliance		Compliance	
	f	%	f	%
DFMC	6	30	14	70
Cardiff count ten chart	9	45	11	55

According to table 4.5, among the 40 antenatal mothers 6(30%) had non compliance and 14(70%) had compliance towards DFMC chart and in Cardiff count ten chart non compliance is 9(45%) and compliance is 11(55%).

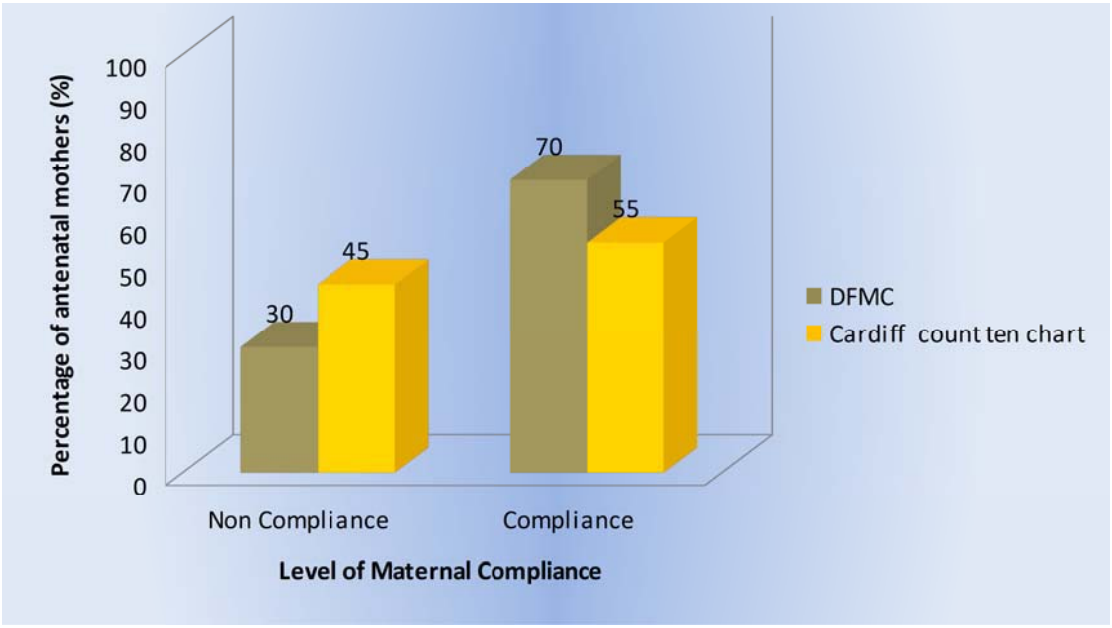

Figure 4.4: Bar diagram showing the percentage distribution of antenatal mothers according to the level of maternal compliance

Section III: Comparison of mother's perception and maternal compliance towards DFMC chart and Cardiff count ten charts.

Table 4.6: Comparison of maternal compliance among mothers towards Cardiff Count Ten Chart and DFMC Chart

Maternal Compliance	Mean	SD	Calculated value	Table value
Cardiff Count Ten Chart	106.4	42.18	9.123 (S)	1.96
DFMC Chart	20.3	1.34		

S*- Statistically Significant, $p<0.05$

According to table 4.6, maternal compliance among mothers towards Cardiff count ten chart mean is 106.4 and SD of 42.18. But in DFMC chart 20.3 of mean and 1.34 of SD. Since calculated value is greater than the table value there is a significant difference between Cardiff Count ten chart and DFMC chart. Maternal compliance is more towards the DFMC chart. So the hypothesis is accepted.

Table 4.7: Comparison of mothers perception towards Cardiff Count Ten Chart and DFMC Chart

Perception	Mean	SD	Calculated value	Table value
Cardiff Count Ten Chart	34.7	4.76	t = 0.221 (NS)	p=0.826
DFMC Chart	34.4	3.76		

NS-Not Significant

According to table 4.7, Mothers Perception towards Cardiff count ten chart ,mean is 34.7 and SD of 4.76. But in DFMC chart, 34.4 of mean and 3.76 of SD. Since calculated

Section IV: Correlation between mother's perception and maternal compliance towards DFMC chart and Cardiff count ten charts.

Table 4.8: Correlation between mother's perception and maternal compliance among mothers towards Cardiff count 10 chart

n = 20

Cardiff Count ten chart	Mean	S.D	'r' Value	'p' Value
Maternal compliance	106.4	42.18	0.118	0.620 (N.S)
Mothers perception	34.7	4.75		

N.S – Not Significant

According to table 4.8, correlation between the mother's perception and maternal compliance towards Cardiff count ten chart mean is 106.4 and 34.7 with SD of 42.18 and 4.75. There is no correlation between maternal compliance and mother's perception towards Cardiff count ten chart.

Table 4.9: Correlation between mothers perception and maternal compliance among mothers towards DFMC Chart

n = 20

DFMC	Mean	S.D	'r' Value	'p' Value
Maternal compliance	20.3	1.34	-0.015	0.951 (N.S)
Mothers perception	34.4	3.76		

N.S – Not Significant

According to table 4.9, correlation between the mothers perception and maternal compliance towards DFMC chart mean is 20.3 and 34.4 with SD of 1.34 and 3.76. There is no correlation between maternal compliance and mother's perception towards DFMC chart.

Section V: Association of maternal compliance with their selected demographic variables in mothers using DFMC chart and Cardiff Count Ten chart.

Table 4.10: Association of maternal compliance among mothers towards DFMC Chart with their selected demographic variables using Chi-square test.

n=20

Demographic variables	Non Compliance		Compliance		d.f.	χ^2	t value
	f	%	f	%			
Age							
20-25	4	20	10	50	1	0.045	0.831
26-30	2	10	4	20			
Educational Status							
Primary	0	0	1	5	-	-	-
High School	3	15	4	20			
HSC	2	10	4	20			
Graduate	1	5	5	25			
Occupation							
Government	0	0	0	0	-	-	-
Private	0	0	0	0			
Self	0	0	1	5			
Housewife	6	30	13	65			
Income							
5000-10,000	3	15	4	0	-	-	-
10,000 – 15,000	2	10	3	15			
15,001 – 20,000	1	5	4	0			
20,001 – 25,000	0	0	3	15			
Religion							
Hindu	6	30	12	60	-	-	
Muslim	0	0	1	5			
Christian	0	0	1	5			

Gestational age							
<36 weeks	5	25	9	45	-	-	-
36-37 weeks	1	5	4	20			
>37 weeks	0	0	1	5			
Pregnancy Category							
Normal	6	30	13	65			
High Risk	0	0	1	5			
Number of antenatal visits							
1-4 times	0	0	0	0	-	-	-
5-9 times	4	20	6	30			
10-15 times	2	10	7	35			
More than 15 times	0	0	1	5			
Methods taught to monitor the foetal movements							
Yes	1	5	3	15	1	0.060	0.807
No	5	25	11	55			
Previous knowledge about fetal movement monitoring							
Yes	1	5	1	5	1	0.423	0.515
No	5	25	13	65			

According to table 4.10, there is no association between age (0.831) methods to monitor the fetal movements (0.807) knowledge about fetal movement counting (0.515) in DFMC chart.

Table 4.11: Association of maternal compliance among mothers towards Cardiff Count ten chart and their selected demographic variables using Chi-square test.

n=20

Demographic variables	Non Compliance		Compliance		d.f.	χ^2	t value
	f	%	f	%			
Age							
20-25	2	10	6	30	1	2.155	0.142
26-30	7	35	5	25			
Educational Status							
Primary	1	5	1	5	3	1.760	0.624
High School	3	15	3	15			
HSC	1	5	4	20			
Graduate	4	20	3	15			
Occupation							
Government	0	0	0	0	-	-	-
Private	1	5	1	5			
Self	0	0	1	5			
Housewife	8	40	9	45			
Income							
5000-10,000	6	30	5	25	-	-	-
10,000 – 15,000	0	0	5	25			
15,001 – 20,000	2	10	1	5			
20,001 – 25,000	1	5	0	0			
Religion							
Hindu	6	30	10	50	-	-	
Muslim	2	10	1	5			
Christian	1	5	0	0			
Others	-	-	-	-			
Working Hours/week							
Less than 10 hours	8	40	10	50	-	-	-
10-20 hours	1	5	1	5			
20-40 hours	0	0	0	0			

Gestational age							
<36 weeks	5	25	8	40	-	-	-
36-37 weeks	4	20	3	15			
>37 weeks	0	0	0	0			
Pregnancy Category							
Normal	8	40	10	50	1	0.022	0.881
High Risk	1	5	1	5			
Number of antenatal visits							
1-4 times	0	0	0	0	-	-	-
5-9 times	2	10	5	25			
10-15 times	4	20	2	10			
More than 15 times	3	15	4	20			
Methods taught to monitor the foetal movements							
Yes	0	0	3	15	-	-	-
No	9	45	8	40			
Previous knowledge about fetal movement monitoring							
Yes	0	0	1	5	-	-	-
No	9	45	10	50			

According to table 4.11, there is no association between the age (0.142), educational status (0.624), pregnancy category (0.881) in Cardiff count ten chart.

CHAPTER-V

RESULTS AND DISCUSSION

This chapter deals with discussion based on objectives, study findings and conclusion by relating with the results and discussion of previous studies. The main focus of the study was to assess the effectiveness of DFMC chart and Cardiff count ten chart. Each individual's baseline data was connected and they were assessed on the basis of maternal compliances and mothers perception.

5.1 Obstetrical variables of antenatal mothers with DFMC Chart and Cardiff count ten chart

Among the 20 antenatal mothers 65% were primi mothers and 45% were multi gravida mother. In gestational weeks 70% belongs to less than 36 weeks, 25% were in 36 to 37 weeks and 5% belongs to more than 37 weeks. In pregnancy category, 95% were normal and 5% of mothers are in high risk. This study was supported by another study which shows that, the mother were able to count the fetal movements better during 32-36 weeks of gestation. **(Maj K Sindhu, et al., 2007)**

Among 20 antenatal mothers 80% of mothers were primi mothers and 5% of mothers having abortion. In gestational age 65% of mothers were in less than 36weeks, 35% of mothers belongs to 36 – 37 weeks. In pregnancy category 90% were normal and 10% of high risk mothers. This study was supported by another randomized study, which shows that, the mothers who used Cardiff count ten chart were between the weeks of 29 to 40. **(Singh, et al., 2013)**

5.2 Assessment of Maternal Compliance among mothers towards DFMC chart and Cardiff count ten chart

The present study shows that among the 40 antenatal mothers the maternal compliance of mothers towards DFMC chart was 14(70%) of compliance and non compliance was 6 (30%) while in Cardiff count ten chart there was 9(45%) samples were under noncompliance and compliance was 11(55%). A multicenter controlled

trial which was done for 1013 singleton pregnant mothers shown the finding as 79% of them had compliance with the use of fetal movement counting charts. This result was similar to the present study. **(Saasatard E, et al., 2012)**

5.3 Assessment of mothers perception towards DFMC Chart and Cardiff count ten chart

The present study shows that among 20 antenatal mothers 16(80%) of mothers were having good perception and 4(20%) in DFMC chart and in Cardiff count ten chart 14(70%) in good perception and 6(30%) showing very good perception. A study that was conducted for 80 subjects given a result as 89.3 % of the subjects had a good perception towards DFMC chart which was same as the present study. **(Diane Dwyer, 1987)**

5.4 Comparison of mother's perception towards Cardiff Count Ten Chart and DFMC Chart

The present study shows that among the 40 antenatal mothers perception towards Cardiff count ten chart mean is 34.7 and 34.4 in DFMC chart. There is a significant difference between mother's perception towards Cardiff count ten chart and DFMC chart. It is contraindicated by another study. Mothers shows good perception was DFMC chart. It shows that a minority of respondents routinely recommended formal fetal movement counting for low risk women. Women who represented with DFM, 62% and 47% in low risk women and 78% and 51% in high risk women for midwives and obstetricians respectively. The Cardiff count ten method was the chart of choice for more than 70% of all respondents. **(Valerie Smith, 2003)**

5.5 Comparison of maternal compliance among mothers towards Cardiff Count Ten Chart and DFMC Chart

The present study shows that among 40 antenatal mothers maternal compliance among mothers towards Cardiff count ten chart, mean is 106.4 and SD of 42.18 and in DFMC chart, mean is 20.3 and SD of 1.34. There is a significant difference between the maternal compliance among mothers towards Cardiff count ten chart and DFMC

chart This study was supported by another study it shows that daily fetal movement counting is generally applicable method of monitoring the foetal wellbeing during pregnancy. **(James F. Pearson, et al., 1995)**

5.6 Correlation between the mothers perception and maternal compliance towards DFMC chart and Cardiff count ten chart

In the present study, the correlation coefficient was calculated to find the relationship between the mothers perception and the maternal compliance towards DFMC chart which gave a result of, r = -0.015. This indicates that there was no relationship between the mother's perception and the maternal compliance towards DFMC chart. This study was supported by another randomized study, which also gave a result as r = -0.041 indicating that there is no relationship between the perception and compliance. **(Singh, et al., 2013)**

CHAPTER-VI

SUMMARY AND CONCLUSION

The study was conducted to assess the effectiveness of DFMC chart Vs Cardiff count ten chart in relation to maternal compliance and mothers perception on self assessment of foetal well being.

Literature was reviewed to obtain more knowledge regarding effectiveness of Cardiff count ten chart and DFMC chart. From the literature it is evident that Cardiff count ten chart is an effective measure to achieve the self assessment of foetal wellbeing.

The research design is adopted for the study was post test control group design and study was conducted in PSG Hospitals, Coimbatore. The total strength of sample was 40 were selected by non probability convenient sampling technique.

Validity and reliability of the demographic tool was tested through pilot study. Keeping the objectives in mind tool was prepared. The tool consists of four sections, Section A: Demographic variables, Section B: Cardiff count ten chart and DFMC chart, Section C: Evaluation form for mother's perception about foetal movement count charts.

6.1 Major findings of the study

- Among 20 mothers, 40% of women age ranged from 20 to 25 years and 60% were in 26 to 30 years in Cardiff count ten chart.
- Most of the mother's age ranged from 20 to 25 years and 30% ranged from 26 to 30 years in DFMC chart.
- Majority of mothers (80%) were primi mothers in DFMC Chart and 65% of them were in Cardiff Count ten chart and 45% of mothers were multigravida in DFMC chart and Cardiff count ten chart.
- Among the 20 antenatal mothers, 65% of antenatal mothers were in <36 weeks and 35% of them were in 36-37 weeks in Cardiff count ten chart. In DFMC chart 70% of them were in <36 weeks and 25% were in 36-37 weeks.
- Among the 40 antenatal mothers 6(30%) had non compliance and 14(70%) had compliance towards DFMC chart and in Cardiff count ten chart non compliance is 9(45%) and compliance is 11(55%).

- There is no significant difference in mother's perception between Cardiff count ten chart and DFMC chart t=(0.221, $p<0.05$). There is a significant difference in maternal compliance between Cardiff count ten chart and DFMC chart t= (9.123, $p<0.05$).
- There is no correlation between maternal compliance and perception towards Cardiff count ten chart and DFMC chart r=(0.118, 0.015) $p<0.05$.
- There is no association between age, methods to monitor the foetal movements, knowledge about fetal movement counting in DFMC chart, and age, educational status, pregnancy category in Cardiff count ten chart.

6.2 Conclusion

Normal foetal movements are an indicator of foetal well being, whereas reduced foetal activity may lead to foetal death. In this study, two main protocols are used to assess the foetal wellbeing are Cardiff count ten chart and DFMC chart. The past researchers have shown that maternal monitoring of foetal movements can lead to lower incidence of stillbirth. While comparing the DFMC chart and Cardiff count ten Chart there is an effectiveness of using DFMC chart for the self assessment of fetal well being by antenatal mother in relation to maternal compliance.

6.3 Nursing Implications:

6.3.1 Nursing Practice:

- Nurses should be involved in educating DFMC chart and Cardiff Count Ten Chart to mother and their families in improvement for self assessment of foetal wellbeing as a procedure.
- Nurses should educate mothers on DFMC chart as a routine basis since the DFMC chart is a evidenced based practice.
- Nurses should provide support and motivate for antenatal mothers to continue the self assessment of foetal wellbeing as a daily routine to have positive maternal and fetal outcome.

6.3.2 Nursing Education

Continuing education among staff nurses will help to promote and update their knowledge on foetal movements charts for improving the self assessment of foetal well being monitoring among antenatal mothers.

6.3.3 Nursing Research

There is need for extensive and intensive research on various methods of monitoring the fetal movements to identify best practices.

6.3.4 Nursing Administration

Fetal movement count chart should be given to the antenatal mother during their visit in the outpatient department.

6.4 Limitations of the Study

Some of the samples dropped out during the study.

6.5 Recommendations for further Study.

- The similar study can be conducted to find the association of self assessment of foetal wellbeing and the anxiety level.
- A comparative study can be conducted between DFMC Chart and Cardiff Count Ten Chart in terms of foetal attachment scale.

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ANNEXURE-I

PERMISSION LETTER

From

Ms. Ashna Jose,
I Year M. Sc Nursing,
PSG College of Nursing,
Peelamedu,
Coimbatore - 4

To

Dr. Seetha Panicker, MD, DGO, DNB
Professor & HOD,
PSG Hospitals,
Coimbatore - 4

Through : The Principal, PSG College of Nursing

Respected Sir,

Sub: Seeking permission to carry out the study in PSG Hospitals, Coimbatore.

I Ms. Ashna Jose, I year M.Sc. Nursing student is interested in doing this study. "**A Comparitive Study on the Effectiveness of DFMC Chart Vs Cardiff Count Ten Chart in Relation to Maternal Compliance on Self Assessment of Fetal Well Being at PSG Hospitals, Coimbatore**". Kindly grant me permission to carry out the study.

Thanking You,

Date:
Place:

Yours sincerely

Ms. Ashna Jose,
I year M.Sc Nursing.

Signature:

permitted

Dr.SEETHA PANICKER,MD (OG),DGO
Reg. No: 38408
Professor & HOD of Obstetrics & Gynaecology
P.S.G.IMSR & Hospitals,Peelamedu,
Coimbatore - 641 004.

ANNEXURE-II

PSG Institute of Medical Sciences & Research
Institutional Human Ethics Committee

Recognized by The Strategic Initiative for Developing Capacity in Ethical Review (SIDCER)
POST BOX NO. 1674, PEELAMEDU, COIMBATORE 641 004, TAMIL NADU, INDIA
Phone : 91 422 - 2598822, 2570170, Fax : 91 422 - 2594400, Email : ihec@psgimsr.ac.in

To
Ms Ashna Jose
I M Sc Nursing
PSG College of Nursing
Coimbatore

Ref: Project No.15/088

Date: March 4, 2015

Dear Ms Ashna Jose,

Institutional Human Ethics Committee, PSG IMS&R reviewed and discussed your application dated 18.02.2015 to conduct the research study entitled *"A comparative study on the effectiveness of DFMC chart Vs cardiff count ten chart in relation to maternal compliance on self assessment of fetal well being"* during the IHEC meeting held on 27.02.2015.

The following documents were reviewed and approved:

1. Project Submission form
2. Study protocol
3. Informed consent form
4. Data collection tool
5. Permission letter from concerned Heads of Department
6. Current CVs of Principal investigator, Co-investigator
7. Budget

The following members of the Institutional Human Ethics Committee (IHEC) were present at the meeting held on 27.02.2015 at IHEC Secretariat, PSG IMS & R between 10.00 am and 11.00 am:

Sl. No.	Name of the Member of IHEC	Qualification	Area of Expertise	Gender	Affiliation to the Institution Yes/No	Present at the meeting Yes/No
1	Dr. P. Sathyan (Chairperson, IHEC)	DO, DNB	Clinician (Ophthalmology)	Male	No	Yes
2	Dr. S. Bhuvaneshwari (Member-Secretary, IHEC)	MD	Clinical Pharmacology	Female	Yes	Yes
3	Dr. S.Shanthakumari	MD	Pathology, Ethicist	Female	Yes	Yes
4	Dr. D. Vijaya	M Sc, Ph D	Basic Medical Sciences (Biochemistry)	Female	Yes	Yes

The study is approved in its presented form. The decision was arrived at through consensus. Neither PI nor any of proposed study team members were present during the decision making of the IHEC. The IHEC functions in accordance with the ICH-GCP/ICMR/Schedule Y guidelines. The approval is valid until one year from the date of sanction. You may make a written request for renewal / extension of the validity, along with the submission of status report as decided by the IHEC.

PSG Institute of Medical Sciences & Research
Institutional Human Ethics Committee

Recognized by The Strategic Initiative for Developing Capacity in Ethical Review (SIDCER)
POST BOX NO. 1674, PEELAMEDU, COIMBATORE 641 004, TAMIL NADU, INDIA
Phone : 91 422 - 2598822, 2570170, Fax : 91 422 - 2594400, Email : ihec@psgimsr.ac.in

Following points must be noted:

1. IHEC should be informed of the date of initiation of the study
2. Status report of the study should be submitted to the IHEC every 12 months
3. PI and other investigators should co-operate fully with IHEC, who will monitor the trial from time to time
4. At the time of PI's retirement/intention to leave the institute, study responsibility should be transferred to a colleague after obtaining clearance from HOD, Status report, including accounts details should be submitted to IHEC and extramural sponsors
5. In case of any new information or any SAE, which could affect any study, must be informed to IHEC and sponsors. The PI should report SAEs occurred for IHEC approved studies within 7 days of the occurrence of the SAE. If the SAE is 'Death', the IHEC Secretariat will receive the SAE reporting form within 24 hours of the occurrence
6. In the event of any protocol amendments, IHEC must be informed and the amendments should be highlighted in clear terms as follows:
   a. The exact alteration/amendment should be specified and indicated where the amendment occurred in the original project. (Page no. Clause no. etc.)
   b. Alteration in the budgetary status should be clearly indicated and the revised budget form should be submitted
   c. If the amendments require a change in the consent form, the copy of revised Consent Form should be submitted to Ethics Committee for approval
   d. If the amendment demands a re-look at the toxicity or side effects to patients, the same should be documented
   e. If there are any amendments in the trial design, these must be incorporated in the protocol, and other study documents. These revised documents should be submitted for approval of the IHEC and only then can they be implemented
   f. Any deviation-Violation/waiver in the protocol must be informed to the IHEC within the stipulated period for review
7. Final report along with summary of findings and presentations/publications if any on closure of the study should be submitted to IHEC

Kindly note this approval is subject to ratification in the forthcoming full board review meeting of the IHEC.

Thanking You,

Yours Sincerely,

SECRETARY
PSG IMS&R
COIMBATORE-641004.
INSTITUTIONAL HUMAN ETHICS COMMITTEE

Dr S Bhuvaneshwari
Member - Secretary
Institutional Human Ethics Committee

ANNEXURE-III

PSG Institute of Medical Science and Research, Coimbatore
Institutional Human Ethics Committee
INFORM CONSENT FORMAT FOR RESEARCH PROJECTS
PATIENT INFORMATION SHEET

I Ashna Jose, am carrying out a study on the topic: "A COMPARATIVE STUDY ON THE EFFECTIVNESS OF DFMC CHART VS CARDIFF COUNT TEN CHART IN RELATION TO MATERNAL COMPLIANCE ON SELF ASSESSMENT OF FETAL WELLBEING IN PSG HOSPITALS COIMBATORE", as part of my research project being carried out under the aegis of the Department of: Nursing

My research guide is: Prof. Sree Renjini .B, Department of Maternity Health Nursing, PSG College of Nursing. / Dr.G.Malarvizhi, Vice principal, PSG College of Nursing.

The justification for this study: Fetal movements in utero are an ex-pression of fetal wellbeing, by counting the fetal movements a patient can therefore monitor the condition of the fetus. In national level the last one year rural area 35/1000 and in Urban area 22/1000 IUD was mentioned. In our PSG Hospital 6 intra uterine death reported from Jan 2014 to April 2014.

The objectives of this study are:
Primary Objective

1. To assess the maternal compliance towards Cardiff count 10 chart and DFMC chart.
2. To assess the mothers perception about Cardiff count ten chart and DFMC chart.

Secondary Objectives

1. To compare the effectiveness of DFMC vs Cardiff count 10 chart in assessment of fetal well being among antenatal mothers.
2. To find out the association between the selected demographic variables and maternal compliance to DFMC chart and Cardiff count 10 chart.

Sample size: 40.

Study volunteers / participants are (specify population group & age group):Antenatal Mothers, who are after 32 weeks of gestation

Location: Antenatal OPD, PSG Hospitals, Coimbatore

Data collected will be stored for a period of 5 years.

Benefits from this study: Mother will be able to monitor the self assessment of fetal movements and fetal wellbeing

Signature / Left thumb impression of the Study Volunteer / Legal Representative:

Signature of the Interviewer with date: Witness:

Contact number of PI: 9159328296
Contact number of Ethics Committee Office: 0422 2570170 Extn: 5818

INFORMED CONSENT FOR PATIENT

The above information regarding the study, has been read by me/ read to me, and has been explained to me by the investigator. Having understood the same, I hereby give my consent to them to interview me. I am affixing my signature / left thumb impression to indicate my consent and willingness to participate in this study (i.e., willingly abide by the project requirements).

Signature / Left thumb impression of the Study Volunteer / Legal Representative:

Signature of the Interviewer with date: Witness:

Contact number of PI: 9159328296

Contact number of Ethics Committee Office: 0422 2570170 Extn.: 5818

´ôÒ¾ø ÀÊÅõ

§¾¾¢ :

¬‰É¡ §ƒ¡Š. ¬¸¢Â ¿¡ý, À¢. ±Š. ƒ¢. ÁÕòÐÅì ¸øæÃ¢Â¢ý, ¦ºÅ¢Ä¢Â÷ Ð¨ÈÂ¢ý ¸£ú, **"Ê±ô.±õ.º¢ ÀðÊÂø ÁüÚõ ¸Õ Å¢ý ¿ÄÉ¢ø ¸Õ×üÈÅÃ¢ý ÍÂ Á¾¢ôÀ£ðÊø ¸Õ Å¢ý ÐÊôÒ ÀüÈ¢Â ÀòÐ ÀðÊÂø¸û ¬¸¢ÂÅü¨È ´ôÀ ¢ðÎ Á¾¢ôÀ£Î ¦ºö¾ø"** ±ýÈ ¾¨ÄôÀ¢ø ¬ö× §Áü¦¸¡ûÇ ¯û§Çý.

±ý ¬ö× ÅÆ¢¸¡ðÊ: §ÀÃ¡º¢Ã¢¨Â. ¸ÃïºÉ¢

¬ö× §Áü¦¸¡ûÅ¾ü¸¡É «ÊôÀ¨¼:

þó¾¢Â¡Å¢ø ¸¼ó¾ ¬ñÎ ÁðÎõ ¸¢Ã¡ÁôÒÈí¸Ç¢ø 3.5% ÁüÚõ ¿¸Ãí¸Ç¢ø 2.2% ÌÆó¨¾¸û ¸ÕÅ¢§Ä§Â þÈóÐûÇÐ, ÁüÚõ ¿ÁÐ À¢. ±Š. ƒ¢. ÁÕòÐÅÁ¨ÉÂ ¢ø ¸¼ó¾ ¬ñÎ ƒÉÅÃ¢ Ó¾ø ²ôÃø ÁðÎõ 6 ÌÆó¨¾¸û þÈóÐûÇÐ. þ¾¨É ¸ðÎôÀÎòÐõ §¿¡ì¸¢ø þó¾ ¬öÅ¢¨É §Áü¦¸¡û¸¢§Èý.

¬öÅ¢ý §¿¡ì¸õ:

1. ¸ÕÅ¢ý ÐÊôÒ ÀüÈ¢Â 10 ÀðÊÂø¸û ÁüÚõ DFMC ÀðÊÂø ¬¸¢ÂÅü¨È ¸Õ×üÈÅ÷ Á¾¢ôÀ¢Î¾ø.
2. ¸ÕÅ¢ý ÐÊôÒ ÀüÈ¢Â 10 ÀðÊÂø ÁüÚõ DFMC ÀðÊÂø ÀüÈ¢ ¾ö ¸ñ¼È ¢ó¾¨Å ÀüÈ¢ Á¾¢ôÀ¢Î¾ø.
3. DFMC ÁüÚõ ¸ÕÅ¢ý ÐÊôÒ ÀüÈ¢Â 10 ÀðÊÂø¸û ¬¸¢ÂÅüÈ¢ý À¡¾¢ô¨À ´ôÀ¢Îõ §ÅÚ ¸¡Äò¾¢üÌ Óó¨¾Â ¾¡öÁ¡÷¸Ç¢ý ¸ÕÅ¢ý ¿Äý ÀüÈ¢ Á¾¢ôÀ ¢Î¾ø.
4. ÌÈ¢ôÀ¢ð¼ À¢ÈôÒ þÈôÒ ÒûÇ¢ Å¢ÀÃ Á¡ÚÀ¡Î ÁüÚõ ¸Ú×Ú¾ø ¬¸ ¢ÂÅü§È¡Î DFMC ÀðÊÂø ÁüÚõ ¸ÕÅ¢ý ÐÊôÒ ÀüÈ¢Â 10 ÀðÊÂø ¬¸ ¢ÂÅüÈ¢üÌ ¯ûÇ ¦À¡ÐÅ¡É «õºò¨¾ ¸ñ¼È¢¾ø.

¬öÅ¢ø ÀíÌ ¦ÀÚõ ¿À÷¸Ç¢ý ±ñ½¢ï¨¸: 40

¬ö× §Áü¦¸¡ûÙõ Þ¼õ: À¢. ±Š. ƒ¢. ÁÕòÐÅÁ¨É, §¸¡ÂõÒòà÷.

¬öÅ¢ý ÀÄý¸û:

Ê±ô.±õ.º¢ ÀðÊÂø ÁüÚõ ¸ÕÅ¢ý ÐÊôÒ ÀüÈ¢Â ÀòÐ ÀðÊÂø¸Ç¢ý ¯¾Å ¢§Â¡Î ¸Õ×üÈ¢ÕìÌõ ¾¡öÁ¡÷¸û ¾í¸Ç¢ý ¸ÕÅ¢ý ¿Ä¨É ¸ñÎ¦¸¡ûÇ ÓÊÔõ.

¬öÅ¢É¡ø ²üÀÎõ «¦ºª¸Ã¢Âí¸û / Àì¸ Å¢¨Ç×¸û: Àì¸ Å¢¨Ç×¸û ±Ð×õ þø¨Ä.

þó¾ ¬öÅ¢ø ¸¢¨¼ìÌõ ¾¸Åø¸û 5 ÅÕ¼í¸û À¡Ð¸¡ì¸ôÀÎõ. þ¨Å §ÅÚ ±ó¾ ¬öÅ ¢üÌõ ÀÂýÀÎò¾ôÀ¼ Á¡ð¼¡Ð. ±ó¾ ¿¢¨ÄÂ¢Öõ ¯í¸¨Çô ÀüÈ¢Â ¾¸Åø¸û Â¡ÕìÌõ ¦¾Ã¢Å¢ì¸ôÀ¼Á¡ð¼¡Ð. «¨Å þÃ¸º¢ÂÁ¡¸ ¨Åì¸ôÀÎõ.

±ó¾ §¿Ãò¾¢ø §ÅñÎÁ¡É¡Öõ ¬öÅ¢Ä¢ÕóÐ Å¢Ä¸¢ì¦¸¡ûÙõ ¯Ã¢¨Á ¯í¸ÙìÌ ¯ñÎ. ¬öÅ¢Ä¢ÕóÐ Å¢Ä¸¢ì¦¸¡ûÅ¾¡ø ¯í¸ÙìÌ «Ç¢ì¸ôÀÎõ º¢¸¢î¨º Â¢ø ±ó¾ Å¢¾ Á¡üÈÓõ þÕì¸¡Ð.

þó¾ ¬Ã¡öîº¢ì¸¡¸ ¯í¸Ç¢¼õ º¢Ä §¸ûÅ¢¸û §¸ð¸ôÀÎõ.

§ÁÖõ, þó¾ ¬öÅ¢ø ÀíÌ ¦¸¡ûÅÐ ¯í¸û ¦º¡ó¾ Å¢ÕôÀõ. þ¾¢ø ±ó¾ Å¢¾ì ¸ð¼¡ÂÓõ þø¨Ä. ¿£í¸û Å¢ÕôÀô Àð¼¡ø, þó¾ ¬öÅ¢ý ÓÊ×¸û ¯í¸ÙìÌò ¦¾Ã¢Âô ÀÎò¾ôÀÎõ.

¬öÅ¡ÇÃ¢ý ¨¸¦Â¡ôÀõ :

§¾¾¢ :

¬ö×ìÌòÀÎÀÅÃ¢ý ´ôÒ¾ø:

¿¡ý þó¾ ¬Ã¡öîº¢Â¢ý §¿¡ì¸õ ÁüÚõ «¾ý ÀÂýÀ¡ðÊ¨Éô ÀüÈ¢ ¦¾Ç¢Å¡¸×õ, Å¢Çì¸Á¡¸×õ ¦¾Ã¢ÂôÀÎò¾ô ÀðÎû§Çý. þó¾ ¬Ã¡öîº¢Â¢ø ÀíÌ ¦¸¡ûÇ×õ, þó¾ ¬Ã¡öîº¢Â¢ý ÁÕòÐÅ Ã£¾¢Â¡É ÌÈ¢ôÒ¸¨Ç ÅÕõ ¸¡Äò¾¢Öõ ¯À§Â¡¸ôÀÎò¾¢ì ¦¸¡ûÇ×õ ÓØ ÁÉÐ¼ý ºõÁ¾¢ì¸¢§Èý.

¬ö×ìÌðÀÎÀÅÃ¢ý ¦ÀÂ÷, Ó¸ÅÃ¢:

¨¸¦Â¡ôÀõ:
§¾¾¢:

¬öÅ¡ÇÃ¢ý ¦¾¡¨Ä§Àº¢ ±ñ: 9159328296
ÁÉ¢¾ ¦¿È¢Ó¨Èì ÌØ «ÖÅÄ¸ò¾¢ý ¦¾¡¨Ä§Àº¢ ±ñ: 0422 2570170 Extn.: 5818

ANNEXURE-IV

SECTION A: DEMOGRAPHIC AND BASELINE DATA OF MOTHER

(1)Sample Number :

(2)Age :

(3)Educational status :

(4)Occupation

(a)Govt employee

(b)Private employee

(c)Self employee

(d)House wife

(5)Income :

(6)Religion

(a)Hindu

(b)Muslim

(c)Christian

(d)Others

(7)How many hours per week do you work?

(a) Less than 10 hours per week

(b) 10 to 20 hours per week

(c) 20 to 40 hours per week

(8)Obstetrical Score : G P L A

(9) LMP : EDD :

(10)Gestational Age :

(11)Which category of pregnancy do you belong to

(a) Normal

(b) High risk

If high risks specify:

(12)How many time during this pregnancy have you been to see your physician?

(a) 1 to 4

(b) 5 to 9

(c) 10 to 15

(d) More than 15

(13)Have you been thought a method to count and keep track of your baby's movements in this pregnancy or previous pregnancies?

(a)Yes

(b)No

(14)Have you read any information about counting your baby's movements in pregnancy?

(a)Yes

(b)No

SECTION B: CARDIFF COUNT TEN FETAL MOVEMENT CHART

This is used in 8 to 12 hours period to record at least of 10 of baby's movements. The time period depend on, when the baby is more active.

INSTRUCTIONS

1. Choose one period during the day to count. You should choose a time when you know your baby is normally active (in the evening for most babies) and you will be able to focus on the baby.
2. Count at the same time every day.
3. You will chart how long it takes to reach 10 movements.
4. Count all recognizable movements. This may be a kick, a punch, rolling, stretching, etc.If you feel a short flurry of kicks, count that as one movement. Do not count hiccups.
5. Fill in all blanks on the chart.
6. There must be at least 10 movements in 10 hours, or you notice a pattern of steadily decreasing movements each day you should come to the y
7. If you feel no movement within an hour after you begin to count go lie down on your left side and really focus on the baby. If you still feel no movement within 90 minutes, contact the physician.
8. If you feel that there is a reason to be concerned about the activity level of your baby further tests may be needed to assess the wellbeing of your baby.
9. Be sure and bring your chart to your prenatal visits.

IMPORTANT

If you feel less than 10 movements in 12 hours, or no movements for one day come to the hospital as early as possible and inform your physician.

Date																											
9am																											
10am																											
11am																											
12am																											
1pm																											
2pm																											
3pm																											
4pm																											
5pm																											
6pm																											
8pm																											
9pm																											

SECTION C: DAILY FETAL MOVEMENT CHART

This is the simple method by which the mother herself plays an important part in checking the health of her own baby. It involves counting the number of movements made by the baby during the day.

INSTRUCTIONS

1. Take one hour period after food in the morning, noon, and at night and count the number of times your baby moves
2. Mark down in the slot the number of times the baby moves.
3. You should count at least 4 movements in an hour.
4. Kicks, rolls, stretch all count as movements .If the baby kicks three times then rolls that count as four movements.

IMPORTANT

If you count less than 4 movements in an hour or if you count less than 10 movements in 12 hours on any day come to the hospital as early as possible.

SAMPLE NUMBER:

DATE	MORNING	AFTERNOON	EVENING

SECTION D: EVALUATION FORM FOR MOTHERS PERCEPTION ABOUT FETAL MOVEMENT CHART

Please place a check in one of the columns for each statement on the left that best fits your feelings.

	Definitely yes	**Yes**	**Uncertain**	**No**	**Definitely No**
1. I feel comfortable completing the foetal movements chart this week.					
2. I know how to fill in the chart correctly.					
3. I know what counted as a foetal movement.					
4. I find this method of counting foetal movements' hard to do.					
5. It was difficult to complete this chart.					
6. I feel counting foetal movement method was time consuming.					
7. I feel the counting of foetal movement interfere with my daily activities.					
8. Counting the foetal movements make me anxious about my baby.					
9.I feel that counting the foetal movements is a worthwhile tool for mothers to use during the pregnancy					
10. I was able to identify the foetal movements by using this method.					

Interpretation:

Below 23 : Poor

23-36 : Good

37-50 : Very Good

«È¢×Úò¾ø¸û:

1. ¸¡¨Ä, Á¾¢Âõ, ÁüÚõ þÃ× ¯½Å¢üÌ À¢ÈÌ ´Õ Á½¢ §¿Ãõ ¯í¸û ÌÆó¨¾Â¢ý «¨º×¸¨Ç ±ñ½¢ì ¦¸¡ûÇ §ÅñÎõ.
2. ÌÆó¨¾Â¢ý «¨º×¸Ç¢ý ±ñ½¢ì¨¸¨Â «ð¼Å¨ÉÂ¢ø ÌÈ¢òÐ ¦¸¡ûÇ×õ.
3. Ì¨Èó¾Ð ¿¡ýÌ «¨º×¸¨ÇÂ¡ÅÐ ´Õ Á½¢ §¿Ãò¾¢ø «È¢Â §ÅñÎõ.
4. ¯¨¾ò¾ø, ÒÈÙ¾ø, ¿£ðÎ¾ø ¬¸¢Â «¨ÉòÐõ «¨º×¸û ¬Ìõ. ãýÚ Ó¨È ¯¨¾òÐ ´Õ Ó¨È ÒÈý¼¡ø «Ð ¿¡ýÌ «¨º×¸û ±É ¦¸¡ûÇø §ÅñÎõ.

Óì¸¢Â ÌÈ¢ôÒ:

±ó¾ ´Õ ¿¡Ç¢Öõ ¿¡ýÌ Ó¨ÈìÌõ Ì¨ÈÅ¡É «¨º×¸û ´Õ Á½¢ §¿Ãò¾¢ø ¯½÷ó¾¡§Ä¡ «øÄÐ «¨º×¸û ´Õ Á½¢ §¿Ãò¾¢ø ¯½÷ó¾¡§Ä¡ «øÄÐ ÀòÐ «¨º×¸Ùì Ìõ ¸£Æ¡¸ ÀÉ¢¦ÃñÎ Á½¢ §¿Ãò¾¢ø þÕó¾¡§Ä¡, ÁÕòÐÅÁ¨Éì ¯¼ÉÊÂ¡¸ ÅÕÁ¡Ú «È¢×Úò¾ôÀÎ¸¢È£÷¸û.

«È¢×Úò¾ø¸û:

- ´Õ ¿¡Ç¢ø ÌÈ¢ôÀ¢ð¼ §¿Ãò¨¾ §¾÷× ¦ºöÐ ¦¸¡ûÇ×õ. ¯í¸û ÌÆó¨¾ ±ô¦À¡ØÐ º¡¾¡Ã½ ¿¢¨ÄÂ¢ø ¯ûÇÐ ±É ¿£í¸û ¯½÷¸¢È£÷¸§Ç¡ (¦À¡ÐÅ¡¸ «¨ÉòÐ ÌÆó¨¾¸Ùõ Á¡¨Ä §¿Ãò¾¢ø) «¨¾ §¾÷× ¦ºö¸. §ÁÖõ «ô¦À¡ØÐ¾¡ý ¯í¸û ÌÆó¨¾ Á£Ð ¸ÅÉõ ¦ºÖò¾ þÂÖõ.
- ¿¡û§¾¡Úõ ´§Ã §¿Ãò¨¾ §¾÷× ¦ºö¸.
- 10 «¨º×¸ÙìÌ ±ùÅÇ× §¿Ãõ ±ÎòÐì ¦¸¡û¸¢ÈÐ ±É «ð¼Å¨É ¦ºöÔí¸û.
- ¯½Õõ «¨ÉòÐ «¨º×¸¨ÇÔõ ¸½ì¸¢Î¸. «¨Å ¯¨¾, ÌòÐ, ÒÃÙ¾ø, ¿£ðÎ¾ø, ±É ±ÐÅ¡Â¢Ûõ. §Äº¡É ¯¨¾Â¡¸ ¯½÷ó¾¡Öõ «¨¾Ôõ ´Õ «¨º× ±É ¸½ì¸¢Î¸. Å¢ì¸ø Åó¾¡ø «¨¾ «¨º× ±É ±ÎòÐì ¦¸¡ûÇ §Åñ¼¡õ.
- «ð¼Å¨ÉÂ¢ø Å¢ÎÀð¼ þ¼í¸¨Ç ¿¢ÃôÀ×õ.
- ¸ñÊôÀ¡¸ 10 Á½¢ §¿Ãò¾¢ø 10 «¨º×¸Ç¡ÅÐ þÕò¾ø §ÅñÎõ Á¡È¡¸ º£Ã¡É Å ¢¸¢¾ò¾¢ø «¨º×¸û ´ù¦Å¡Õ ¿¡Ùõ Ì¨ÈóÐ ¦¸¡ñ§¼ Åó¾¡ø ¿£í¸û ¸ñÊôÀ¡¸ ÁÕòÐÅÁÉ¢ìÌ ÅÃ §ÅñÎõ.
- ´Õ Á½¢ §¿Ãò¾¢üÌ ±ó¾ «¨º¨ÅÔõ ¯½ÃÅ¢ø¨Ä ±É¢ø ¿£í¸û ¯í¸û þ¼Ð ÒÈÁ¡¸ º¡öóÐ ÀÎòÐ ¯í¸û ÌÆó¨¾Â¢ý «¨º¨Å ¸Å½¢ì¸×õ. «ô¦À¡ØÐõ 90 ¿¢Á ¢¼í¸Ç¢ø ¿£í¸û «¨º¨Å ¯½ÃÅ¢ø¨Ä ±ýÈ¡ø ÁÕòÐÅ¨Ã «Ï¸×õ.
- ¯í¸û ÌÆó¨¾Â¢ý «¨º×¸û ÌÈ¢òÐ ²§¾Ûõ ºó§¾¸§Á¡, «øÄÐ ¾ÅÈ¡¸ ¯½÷ó¾£÷¸û ±É¢ø «ÐÀüÈ¢ º¢Ä ÀÃ¢§º¡¾¨É¸û ¦ºöÂ §¾¨ÅÂ¢ÕìÌõ, «Ð ¯í¸û º¢ÍÅ¢ý ¿ý¨Áì¸¡É Á¾¢ôÀ£Î ¬Ìõ.
- ¯í¸û ÁÕòÐÅ ÀÃ¢§º¡¾¨ÉÂ¢ý §À¡Ð ¸ñÊôÀ¡¸ þó¾ «ð¼Å¨É¨Â ¦¸¡ñÎÅÃ ÁÈì¸¡¾£÷¸û.

Óì¸¢Â ÌÈ¢ôÒ:

12 Á½¢ §¿Ãò¾¢ø 10 üÌõ Ì¨ÈÅ¡É «¨º×¸¨Ç ¯½÷ó¾¡§Ä¡ «øÄÐ ´Õ ¿¡û ÓØÐõ «¨º× ¯½ÃÅ¢ø¨Ä ±ýÈ¡§Ä¡ ¸ñÊôÀ¡¸ Å¢ÃóÐ ÁÕòÐÅÁ¨ÉìÌ ÅÃ §ÅñÎõ. §ÁÖõ ÁÕòÐÅ¨Ã ¯¼§É «Û¸ §ÅñÎõ.

ÀÌ¾¢ 'C' Á¾¢ôÀ£òÎ ÅÊÅõ

º¢ÍÅ¢ý «¨º×¸¨Ç ±ñÏõ ¾¡öÁ÷¸Ùì¸¡É ÀÊÅõ.

Å. ±ñ		¯Ú¾¢Â¡¸ ¬õ (5)	¬õ (4)	¦¾Ã¢ÂÅ ¢ø¨Ä (3)	þø¨Ä (2)	¯Ú¾¢Â¡¸ þø¨Ä (1)
1.	þó¾ Å¡Ãò¾¢ý º¢Í «¨º¨Å ÌÈ¢ìÌõ «ð¼Å¨É¨Â ÓÊôÀ¾¢ø ÁÉ ¿¢¨È¨Å ¯½÷¸¢§Èý					
2.	«ð¼Å¨É¨Â ¾ÅÈ¢ýÈ¢ ÓÊì¸ ±ÉìÌ ¿ýÈ¡¸¦¾Ã¢Ôõ					
3.	º¢ÍÅ¢ý «¨ºÅ¢ø ±Åü¨È ÌÈ ¢òÐì¦¸¡ûÇ §ÅñÎõ ±É ±ÉìÌ ¦¾Ã ¢Ôõ					
4.	º¢ÍÅ¢ý «¨º¨Å ÌÈ¢òÐì¦¸¡ûÅ¨¾ ¸ÊÉÁ¡¸ ¯½÷¸¢§Èý.					
5.	¦ÉýÉ¡ø þó¾ «ð¼Å¨É¨Â ±Ç ¢¾¡¸ ÓÊì¸ þÂÄÅ¢ø¨Ä.					
6.	º¢ÍÅ¢ý «¨º¨Å ÌÈ¢ìÌõ Ó¨È «¾¢¸ §¿Ãò¨¾ ±ÎìÌõ ±É ¯½÷¸¢§Èý.					
7.	º¢ÍÅ¢ý «¨º¨Å ÌÈ¢òÐ ¨ÅôÀÐ ±ÉÐ ¾¢ÉºÃ¢ §Å¨Ä¸¨Ç À¡¾ ¢ôÀ¾¡¸ ¯½÷¸¢§Èý.					
8.	º¢ÍÅ¢ý «¨º¨Å ÌÈ¢òÐ ¨ÅôÀÐ ±ÉÐ º¢ÍÅ¢ý Á£¾¡É ¸Å¨Ä¨Â «¾¢¸Ã¢ì¸ ¦ºö¸¢ÈÐ.					
9.	º¢ÍÅ¢ý «¨º¨Å ÌÈ¢òÐ ¨ÅôÀÐ §ÀÚ¸¡Ä ¾¡öÁ¡÷¸ÙìÌ Á¢¸×õ ¿ý¨Á ¦¸¡Îì¸ ÜÊÂÐ ±É ¯½÷¸ ¢§Èý.					
10.	þó¾ «ð¼Å¨É Ó¨È¨Â ÀÂýÀÎò¾¢ ±ýÉ¡ø º¢ÍÅ¢ý «¨º¨Å ¸½¢ì¸ ÓÊÔõ ±É ±ýÛ¸ ¢§Èý.					